OpenBook 1556

Service Guide

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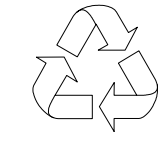

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Revision History

Please refer to the table below for the updates made on OpenBook 1556 service guide.

Date	Chapter	Updates

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Conventions

The following conventions are used in this manual:

`Screen messages`	Denotes actual messages that appear on screen.
NOTE	Gives bits and pieces of additional information related to the current topic.
WARNING	Alerts you to any damage that might result from doing or not doing specific actions.
CAUTION	Gives precautionary measures to avoid possible hardware or software problems.
IMPORTANT	Reminds you to do specific actions relevant to the accomplishment of procedures.

Preface

Before using this information and the product it supports, please read the following general information.

1. This Service Guide provides you with all technical information relating to the BASIC CONFIGURATION decided for our "global" product offering. To better fit local market requirements and enhance product competitiveness, your regional office MAY have decided to extend the functionality of a machine (e.g. add-on card, modem, or extra memory capability). These LOCALIZED FEATURES will NOT be covered in this generic service guide. In such cases, please contact your regional offices or the responsible personnel/channel to provide you with further technical details.
2. Please note WHEN ORDERING FRU PARTS, that you should check the most up-to-date information available on your regional web or channel. If, for whatever reason, a part number change is made, it will not be noted in the printed Service Guide. For AUTHORIZED SERVICE PROVIDERS, your office may have a DIFFERENT part number code to those given in the FRU list of this printed Service Guide. You MUST use the list provided by your regional office to order FRU parts for repair and service of customer machines.

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System Specifications

Features

This computer was designed with the user in mind. Here are just a few of its many features:

Performance

- Intel^{R} Pentium^{R} M processor
- 14.1-inch or 15.0-inch TFT (Thin Film Transistor) LCD at 1024 x 768 XGA (eXtended Graphics Array) resolution, or 15.0-inch TFT LCD at 1400 x 1050 SXGA+ (Super eXtended Graphic Array Plus) resolution, all displaying in 32-bit color depth.
- Memory upgradeable to 1 GB with 2 PC2700/PC2100 (266/333MHz DDR) soDIMM slots
- High-capacity, Enhanced-IDE hard disk
- Lithium-Ion battery pack
- Power management system
- Dual display capability
- Simultaneous LCD and CRT display
- External CRT display support up to 1024 x 768 x 16M colors

Multimedia

- Super DJ panel for playing music CDs without powering on the system (option)
- AC'97 2.2-compliant stereo audio
- SPDIF line-out jack
- Built-in microphone
- DVD/CD-RW combo drive or DVD drive
- S-video output port

Connectivity

- High-speed fax/data software modem
- Ethernet LAN
- Fast infrared wireless communication (option)
- 802.11b, 802.11a + 802.11b, or 802.11g wireless LAN (option)

Human-centric design and ergonomics

- Sleek, smooth, slim and stylish design
- Full-sized keyboard
- Ergonomically-centered touchpad pointing device with 4-way scroll button
- Launch keys
- Super DJ panel (option)

Expansion

- Upgradeable memory and hard disk
- CardBus, USB 2.0 and IEEE 1394
- Memory Stick / Secure digital (SD) combo slot (option)

I/O ports

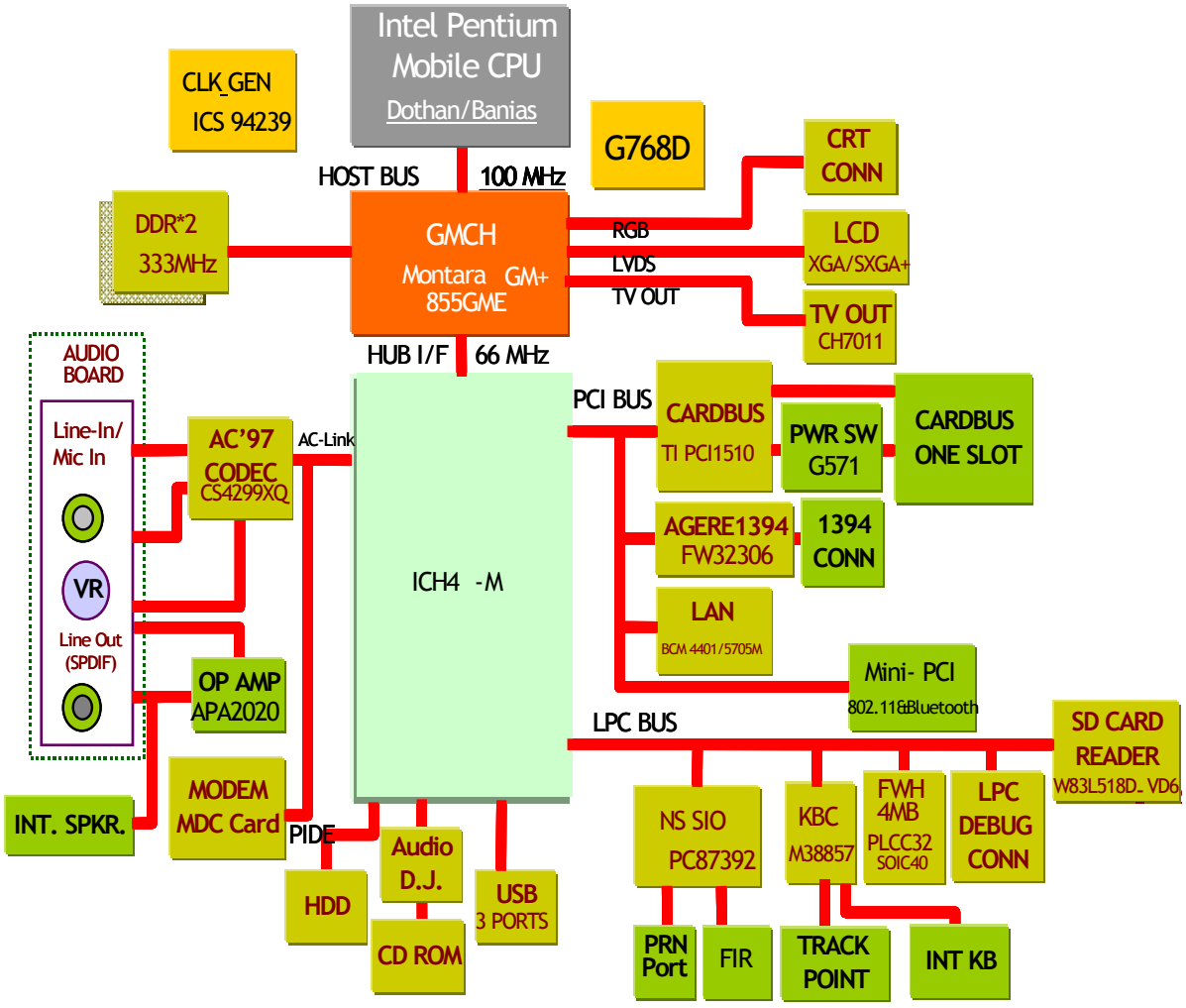
- One PCMCIA type II slot
- One RJ-11 jack (V.92) for 56kbps Fax/Modem
- One RJ-45 network jack (Ethernet 10/100)

- One DC-in jack
- One external monitor port (DDC 2.0)
- One parallel port
- One audio line-out jack (SPDIF) (3.5mm mini-jack)
- One audio line-in jack (3.5mm mini-jack)
- Three USB 2.0 ports
- One IEEE 1394 port (4-pin)
- One S-video output port
- One FIR wireless communication port (IrDA-compliant) (option)
- One RJ-45 network jack (Ethernet 10/100/1000) (option); replaces Ethernet/Fast Ethernet jack
- One Multi-Media (SD/MS/MMC card) reader (option)
- Wireless LAN (mini-PCI) (option)
- Audio DJ panel (option)

System

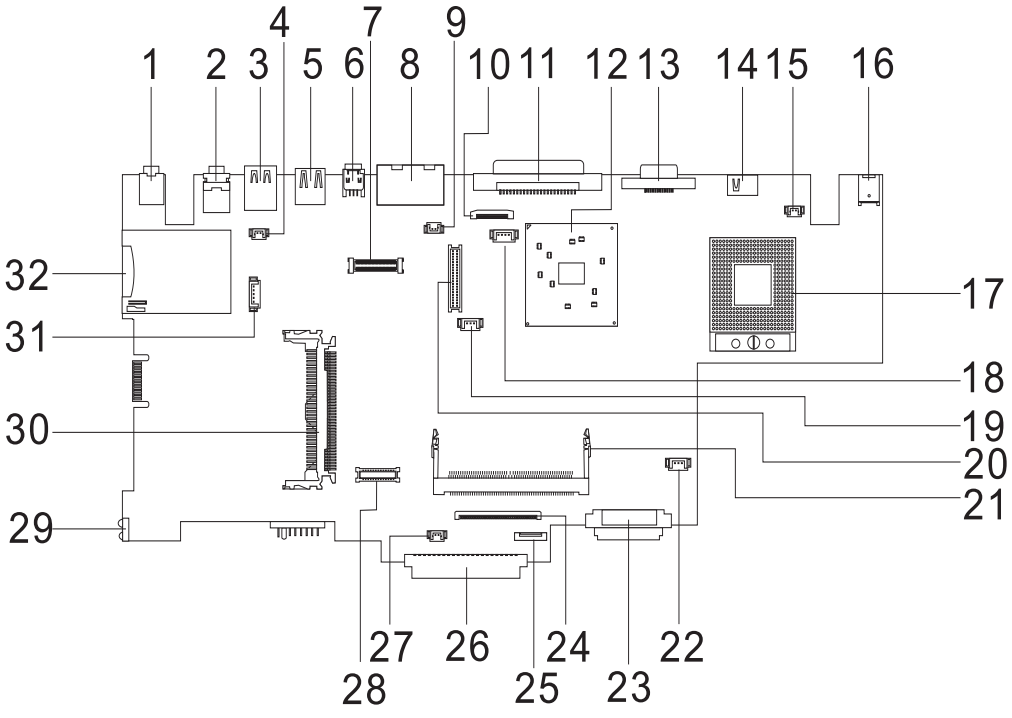
- Microsoft windows XP Home and Professional operating system

System Block Diagram



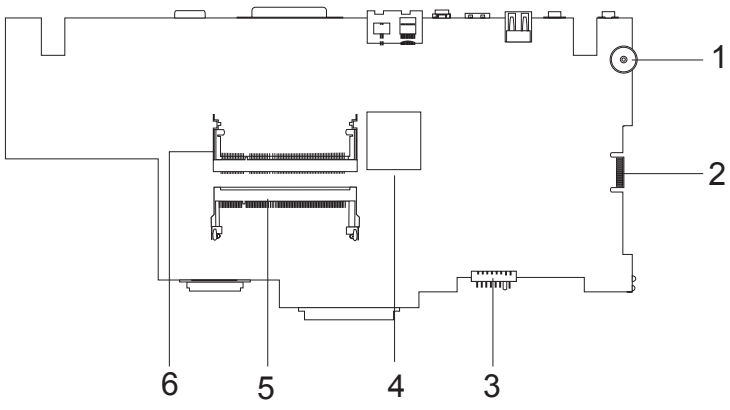
Board Layout

Top View



1	Line-in/Microphone-in connector	17	CPU socket
2	Line-out connector	18	Speaker cable connector
3	USB port	19	RTC battery connector
4	Power button cable connector	20	Inverter cable connector
5	USB port	21	Mini-PCI connector
6	1394 connector	22	Fan connector
7	LCD coaxial cable connector	23	Optical drive connector
8	RJ45/RJ11 connectors	24	Keyboard cable connector
9	Modem ring cable connector	25	Keypad cable connector
10	Audio DJ connector (1556-GL/GV Only)	26	Hard diskette drive connector
11	Parallel port	27	Microphone connector
12	Intel Montara GME (GMCH)	28	Modem connector
13	External monitor port	29	FIR indicator
14	TV-out connector	30	PCMCIA cardbus connector
15	Lid cover switch cable connector	31	Launch key cable connector
16	AC adapter connector	32	SD/MS/MMC card reader socket

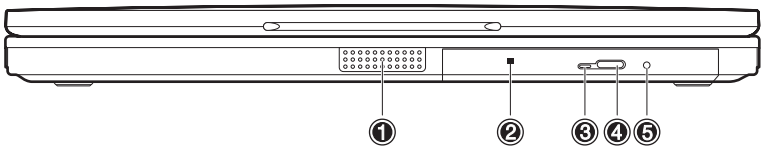
Bottom View



1	Volume adjuster	4	Intel ICH4-M
2	Golden finger for debug	5	Memory socket 2
3	Battery connector	6	Memory socket 1

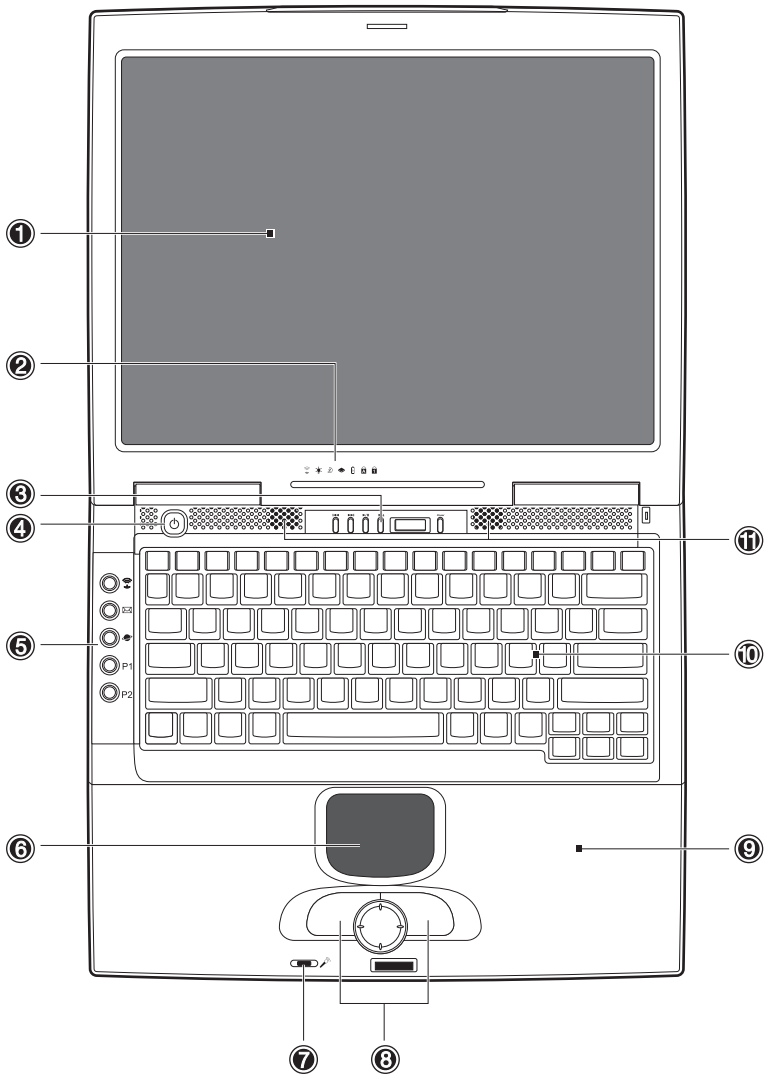
Outlook View

Front View



Number	Item	Description
1	Display cover latch	Press to unlatch the display cover
2	Optical drive	Accepts a CD or DVD
3	LED indicator	Lights up when the optical is active
4	Eject button	Press to eject the drive tray
5	Emergency eject hole	Insert a pin to eject the drive tray when power is off

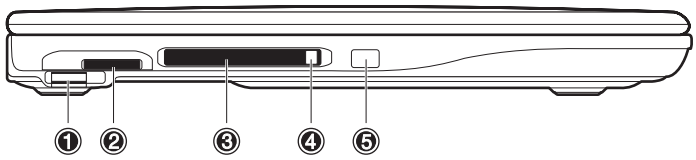
Top View



Number	Item	Description
1	Display screen	Also called LCD (liquid-crystal display), displays computer output.
2	Status indicators	LEDs (light-emitting diode) that turn on and off to show the status of the computer, its functions and components.
3	Super DJ control panel	Control buttons for playing audio.
4	Power button	Turns on the computer power.
5	Launch keys	Buttons for launching frequently-used programs.
6	Touchpad	Touch-sensitive pointing device which functions like a computer mouse.
7	Microphone	Inputs sounds and voices into your computer.
8	Click buttons (left, right, and center)	The left and right buttons function like the left and right mouse buttons.
9	Palm rest	Comfortable support area for your hands when you use the computer.

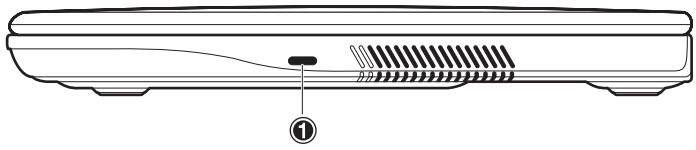
Number	Item	Description
10	Keyboard	Inputs data into your computer.
11	Speakers	Outputs sound.

Left Panel



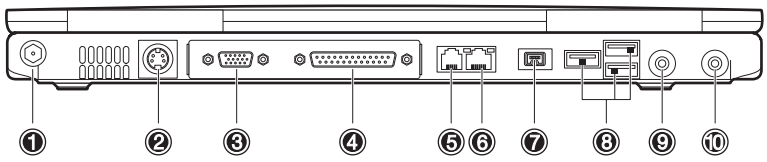
Number	Icon	Item	Description
1		Volume control	Adjusts the volume.
2		Memory Stick / Secure Digital card slot (option)	Accepts a Memory Stick, Secure Digital (SD) or MultiMedia Card (MMC) memory card.
3		PC card slot	Accepts one Type II 16-bit PC card or 32-bit CardBus PC card.
4		PC card eject button	Ejects the PC card from its slot.
5		Infrared port (option)	Interfaces with infrared devices (e.g., infrared printer, IR-aware computer).

Right Panel



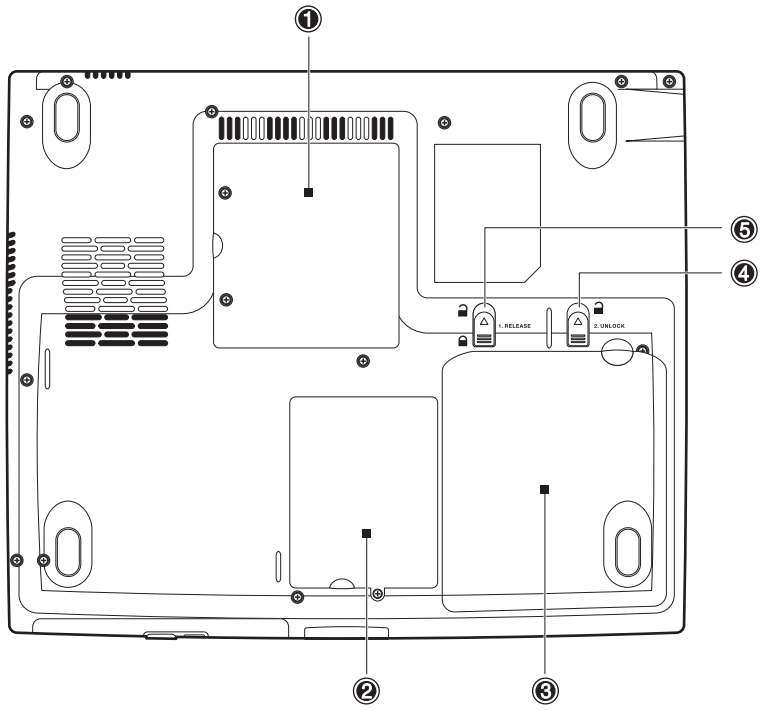
Number	Icon	Item	Description
1		Security keylock	Connects to a Kensington-compatible computer security lock.

Rear Panel



Number	Icon	Item	Description
1		DC-in jack	Connects to an AC adapter.
2		S-video out port	Connects to a television or display device with S-video input.
3		External monitor port	Connects to a display monitor (up to 2048x1536 resolution).
4		Parallel port	Connects to a parallel device (e.g., parallel printer).
5		Modem jack	Connects a phone line (only for models with an internal fax/data modem).
6		Network jack	Connects to an Ethernet 10/100-based network.
7	1394	IEEE 1394 port	Connects to a IEEE 1394-compatible (4-pin) device (e.g., digital video camera).
8		USB ports	Connects to USB devices (e.g., USB digital camera).
9		Line-in jack	Accepts audio line-in devices (e.g., audio CD player, stereo walkman)
10		SPDIF line-out jack	Connects to audio line-out devices (e.g., speakers, headphones); supports SPDIF connections.

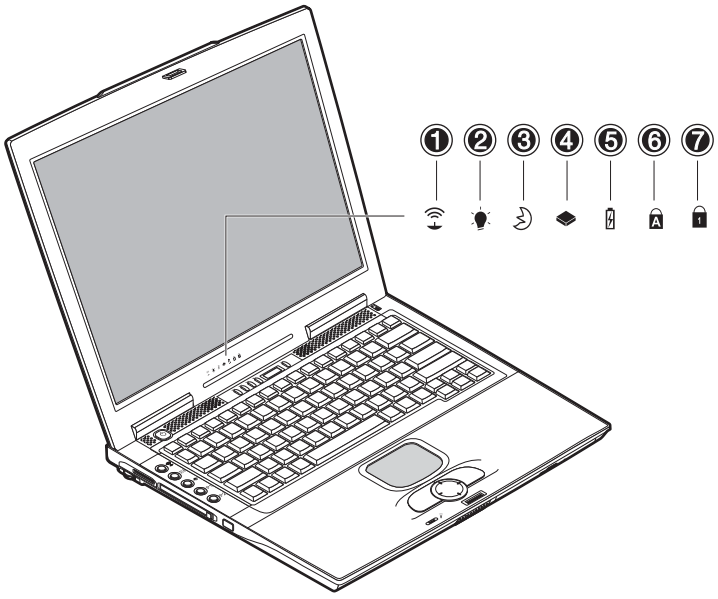
Bottom Panel



Number	Icon	Item	Description
1		Memory compartment	Houses the computer's main memory.
2		Hard disk bay	Houses the computer's hard disk.
3		Battery bay	Houses the computer's battery pack.
4		Battery release latch	Unlatches the battery to remove it.
5		Battery lock	Locks/unlocks the battery pack.

Indicators

The computer has seven easy-to-read status icons on the bottom of the display screen.

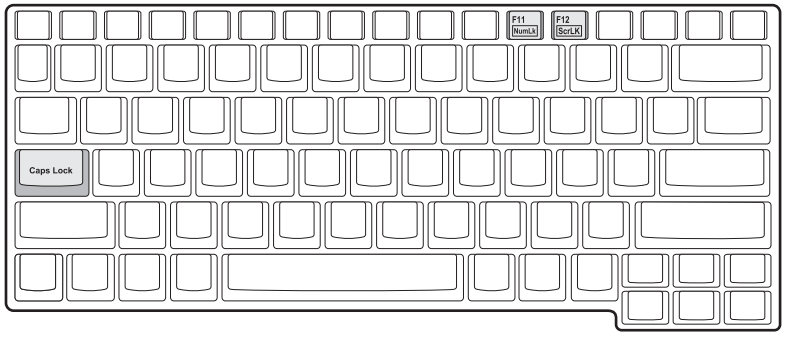


The Power, Sleep status and Wireless Communication icons are visible even when you close the display cover so you can see the status of the computer while the cover is closed.

Number	Icon	Function	Description
1		Wireless Communication	Lights when the Wireless LAN capability (optional) is enabled.
2		Power	Lights when the computer is on. Blinks when a battery-low condition occurs.
3		Sleep	Blinks when computer enters Hibernation mode.
4		Media Activity	Lights when the hard disk or Media drive is active.
5		Battery Charge	Lights when the battery is being charged.
6		Caps Lock	Lights when Caps Lock is activated.
7		Num Lock (Fn+F11)	Lights when Num Lock is activated.

Lock Keys

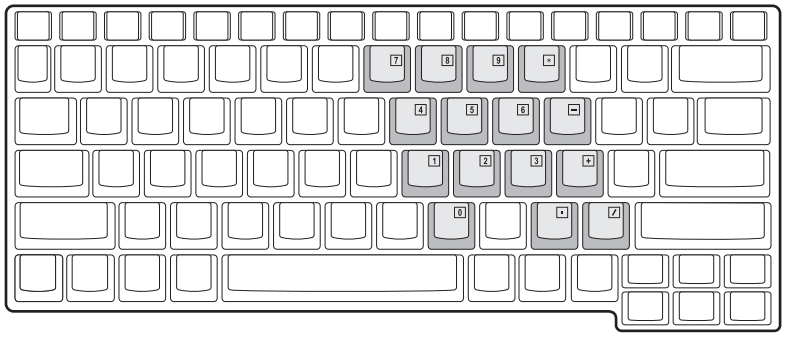
The keyboard has three lock keys which you can toggle on and off.



Lock Key	Description
Caps Lock	When Caps Lock is on, all alphabetic characters typed are in uppercase.
Num Lock (Fn-F11)	When Num Lock is on, the embedded keypad is in numeric mode. The keys function as a calculator (complete with the arithmetic operators +, -, *, and /). Use this mode when you need to do a lot of numeric data entry. A better solution would be to connect an external keypad.
Scroll Lock (Fn-F12)	When Scroll Lock is on, the screen moves one line up or down when you press the up or down arrow keys respectively. Scroll Lock does not work with some applications.

Embedded Numeric Keypad

The embedded numeric keypad functions like a desktop numeric keypad. It is indicated by small characters located on the upper right corner of the key caps. To simplify the keyboard legend, cursor-control key symbols are not printed on the keys.

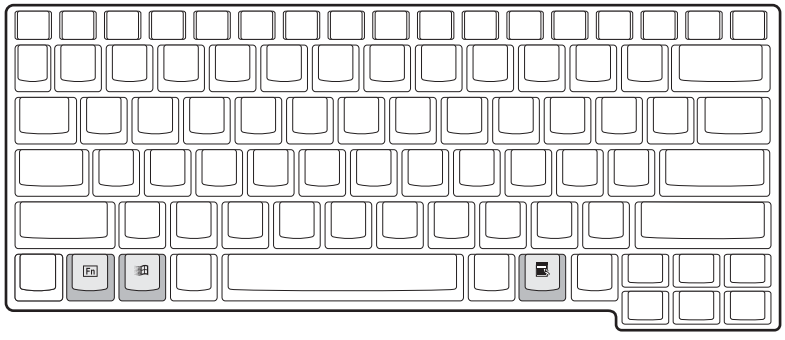


Desired Access	Num Lock On	Num Lock Off
Number keys on embedded keypad	Type numbers in a normal manner.	
Cursor-control keys on embedded keypad	Hold Shift while using cursor-control keys.	Hold Fn while using cursor-control keys.
Main keyboard keys	Hold Fn while typing letters on embedded keypad.	Type the letters in a normal manner.

NOTE: If an external keyboard or keypad is connected to the computer, the Num Lock feature automatically shifts from the internal keyboard to the external keyboard or keypad.

Windows Keys

The keyboard has two keys that perform Windows-specific functions.

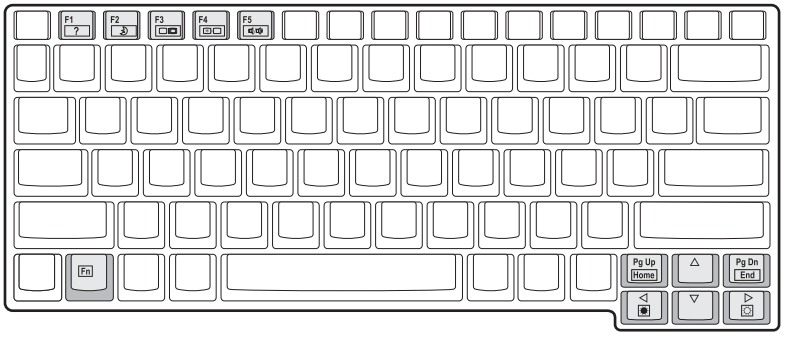


Key	Icon	Description
Windows logo key		Start button. Combinations with this key perform shortcut functions. Below are a few examples: Windows + Tab (Activates next task bar button) Windows + E (Explores My Computer) Windows + F (Finds Document) Windows + M (Minimizes All) Shift + Windows + M (Undoes Minimize All) Windows + R (Displays the Run...dialog box)
Application key		Opens the application's context menu (same as a right-click).

Hot Keys

The computer employs hot keys or key combinations to access most of the computer's controls like screen contrast and brightness, volume output and the BIOS Utility.

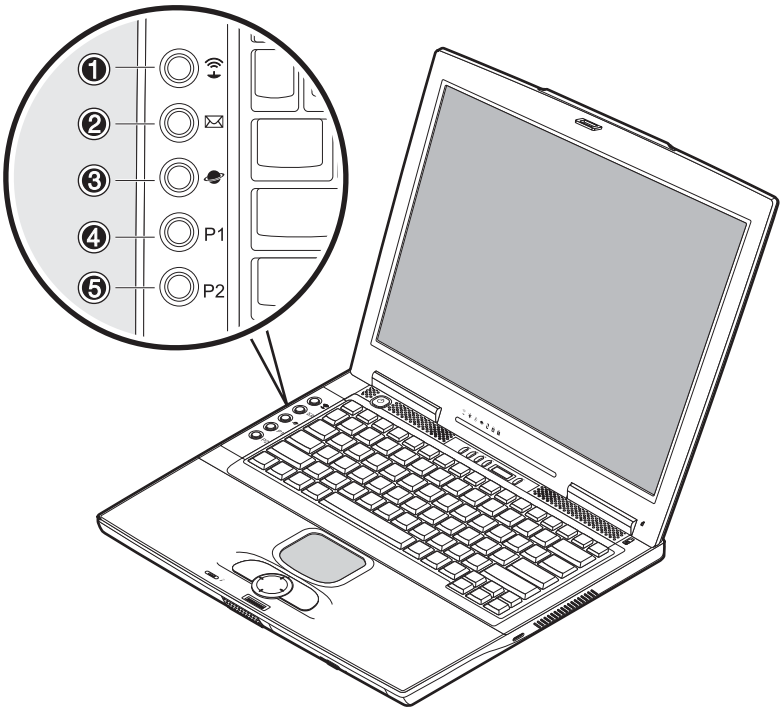
To activate hot keys, press and hold the **Fn** key before pressing the other key in the hot key combination.



Hot Key	Icon	Function	Description
Fn-F1	?	Hot key help	Displays a list of the hotkeys and their functions.
Fn-F2		Sleep	Puts the computer in Sleep mode, which can be defined via the advanced section of the Power Management Properties in the Windows Control Panel.
Fn-F3		Display toggle	Switches display output between the display screen, external monitor (if connected) and both the display screen and external monitor.
Fn-F4		Screen blank	Turns the display screen backlight off to save power. Press any key to return.
Fn-F5		Speaker on/off	Turns the speakers on and off; mutes the sound.
Fn-PgUP		Home	Functions as the "Home" key.
Fn-PgDn		End	Functions as the "End" key.
Fn-		Brightness up	Increases the screen brightness.
Fn-		Brightness down	Decreases the screen brightness.

Launch Keys

Located on the left of the keyboard are five buttons. These buttons are called launch keys. They are designated as Wireless Communication, E-mail, Internet Browser, P1 and P2 buttons.



Number	Icon	Function	Description
1		Wireless communication	This button is used to enable or disable the wireless LAN (optional) function.
2		E-mail	The mail button is used to launch the E-mail application.
3		Internet browser	By default, is used to launch your Internet browser.
4	P1	P1	This button is user-programmable.
5	P2	P2	This button is user-programmable.

Hardware Specifications and Configurations

Processor

Item	Specification
CPU type	Intel Mobile Pentium M 1.3GHz - 1.7GHz processor with 512KB L2 on-die Cache
CPU package	Micro-FCPGA package
CPU core voltage	1.3V
CPU I/O voltage	1.2V

BIOS

Item	Specification
BIOS vendor	Phoenix
BIOS Version	R01
BIOS ROM type	Flash ROM
BIOS ROM size	256KB or 512KB
BIOS package	32-pin TSOP
Supported protocols	ACPI 1.0b, APM 1.2, PC Card 95-3.0, SM BIOS 2.3, ECP/IEEE 1394 1.7 & 1.9, IrDA, PCI 2.2, PnP 1.0a, DMI 2.0, PS/2 keyboard and mouse, USB, VESA VGA BIOS, DDC-2B, CD-ROM bootable, Windows keyboard Microsoft Simple Boot Flag
BIOS password control	Not available

Second Level Cache

Item	Specification
Cache controller	Built-in CPU
Cache size	512KB
1st level cache control	Always enabled
2st level cache control	Always enabled
Cache scheme control	Fixed in write-back

System Memory

Item	Specification
Memory controller	Built-in Intel Montara GME
Onboard memory size	0MB
DIMM socket number	2 sockets (2 banks)
Supports memory size per socket	512MB
Supports maximum memory size	1024MB
Supports DIMM type	Synchronous DDR
Supports DIMM Speed	266/333 MHz
Supports DIMM voltage	2.5V
Supports DIMM package	200-pin soDIMM
Memory module combinations	You can install memory modules in any combinations as long as they match the above specifications.

LAN Interface

Item	Specification
Chipset	BCM 4401/5705M
Supports LAN protocol	10/100 Mbps or Giga LAN
LAN connector type	RJ45
LAN connector location	Rear side

Modem Interface

Item	Specification
Chipset	Ambit MDC module with Lucent modem controller
Fax modem data baud rate (bps)	14.4K
Data modem data baud rate (bps)	56K
Supports modem protocol	V.90 MDC
Modem connector type	RJ11
Modem connector location	Rear side

Hard Disk Drive Interface

Item	Specification		
Vendor & Model Name	Hitachi DK23EA-20	Hitachi DK23EA-30	Hitachi DK23EA-40
Capacity (MB)	20G	30G	40G
Bytes per sector	512	512	512
Data heads	2	2	3
Recording zone	16	16	16
Drive Format			
Disks	1	1	2
Spindle speed (RPM)	4200 RPM	4200 RPM	4200 RPM
Performance Specifications			
Buffer size	2048KB	2048KB	2048KB
Interface	ATA-5 (IDE)	ATA-5 (IDE)	ATA-5 (IDE)
Max. media transfer rate (disk-buffer, Mbytes/s)	19.4 ~ 37.1	19.4 ~ 37.1	19.4 ~ 37.1
Data transfer rate (host~buffer, Mbytes/s)	16.6 MB/Sec. (PIO Mode 4/Multiword DMA Mode 2) 100 MB/Sec. (Ultra DMA Mode 5)	16.6 MB/Sec. (PIO Mode 4/Multiword DMA Mode 2) 100 MB/Sec. (Ultra DMA Mode 5)	16.6 MB/Sec. (PIO Mode 4/Multiword DMA Mode 2) 100 MB/Sec. (Ultra DMA Mode 5)
DC Power Requirements			
Voltage tolerance	5V(DC) +/- 5%	5V(DC) +/- 5%	5V(DC) +/- 5%

DVD-ROM Interface

Item	Specification
Vendor & model name	LiteON LSD-081
Rotational speed	CD-ROM read: 5,000 rpm DVD-ROM read: 5,000 rpm
Transfer rate (KB/sec.)	Sustained: DVD-ROM inside: Min.: 4.6Mbytes/sec. CD-ROM inside: Min.: 1.575Mbytes/sec.
Data Buffer Capacity	256 KBytes
Interface	IDE/ATAPI
Applicable disc format	CD-DA, CD ROM Mode-1, CD-ROM/XA Mode-2 Form-1 and Form-2, CD-I Ready, Video-CD (MPEG-1), Karaoke CD, Photo-CD, Enhanced CD, CD extra, I-Trax CD, UDF, and CD-TEXT.
Loading mechanism	Soft eject (with emergency eject hole)
Power Requirement	
Input Voltage	5V(DC) +/- 5%

DVD + RW Interface

Item	Specification
Vendor & model name	QSI SBW242
Rational speed	Read: DVD-5 (single layer): 4,700 rpm (3.5X ~ 8.5X CAV) typical DVD-9 (dual layer): 3,200 rpm (2.3X ~ 5.5X CAV) typical CD: 4,800 rpm (10.5X ~ 24X CAV) typical Write: CD-R: 24X/20X/16X/12X/8X Zone CLV (15X in average) 8X True CLV, 4X True CLV CD-RW: 4X True CLV High Speed CD-RW: 10X True CLV, 4X True CLV
Transfer rate (KB/sec.)	Sustained: DVD-ROM inside: Min.: 4.495Mbytes/sec. Typical: 4.732Mbytes/sec. CD-ROM inside: Min.: 1.5Mbytes/sec. Typical: 1.575Mbytes/sec.
Data Buffer Capacity	2MB
Interface	IDE/ATAPI
Applicable disc format	DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+RW, DVD-RAM (optional) CD (Read): CD-DA, CD-ROM Mode-1, CD-ROM/XA Mode-2 Form-1 and Mode-2 Form-2, CD-i Ready, Video-CD (MPEG-1), Karaoke CD, Photo-CD, Enhanced CD, CD Plus, CD Extra, i-trax CD, CD-Text, CD-R, and CD-RW CD(Write): CD-DA, CD-ROM Mode-1, CD-ROM/XA Mode-2 Form-1 and Mode-2 Form-2, CD-i, Video-CD, CD-Text
Loading mechanism	Soft eject (with emergency eject hole)
Power Requirement	
Input Voltage	5V(DC) +/- 5%

Audio Interface

Item	Specification
Audio Controller	Cirrus Logic CS4299-XQ
Audio onboard or optional	Built-in
Mono or Stereo	Stereo
Resolution	18 bit stereo Digital to analog converter 18 bit stereo Analog to Digital converter
Compatibility	Microsoft PC98/PC99, AC97 2.1
Mixed sound source	Line-in, CD, Video, AUX
Voice channel	8/16-bit, mono/stereo
Sampling rate	44.1 KHz
Internal microphone	Yes
Internal speaker / Quantity	Yes
Supports PnP DMA channel	Not available
Supports PnP IRQ	IRQ10

Video Interface

Item	Specification
Chip vendor and model name	Intel Montara GME
Chip voltage	Core/2.5V Memory/2.5V
Supports ZV (Zoomed Video) port	No
Graph interface	4X AGP (Accelerated Graphics Port) bus
Maximum resolution (LCD)	14.1” TFT XGA, 1024x768 high color 15.0” TFT XGA, 1024x768 high color 15.0” TFT SXGA+, 1400x1500 high color
Maximum resolution (CRT)	1024x768x16M colors

Video Memory

Item	Specification
Fixed or upgradeable	Fixed
Video memory size	64MB

Video Resolutions Mode

Resolution	8 bits (256 colors)	16 bits (High color)	24 bits (True color)	32 bits (True color)
640x480	Yes	Yes	Yes	Yes
720x480	Yes	Yes	Yes	Yes
800x600	Yes	Yes	Yes	Yes
848x480	Yes	Yes	Yes	Yes
1024x768 (Maximum for: 14.1” TFT XGA, 15.0” TFT XGA, External CRT)	Yes	Yes	Yes	Yes
1152x864	Yes	Yes	Yes	Yes

Video Resolutions Mode

Resolution	8 bits (256 colors)	16 bits (High color)	24 bits (True color)	32 bits (True color)
1280x1024	Yes	Yes	Yes	Yes
1400x1050 (Maximum for: 15.0” TFT SXGA+)	Yes	Yes	Yes	Yes

Parallel Port

Item	Specification
Parallel port controller	NS SIO PC87392
Number of parallel port	1
Location	Rear side
Connector type	25-pin D-type connector, in female type
Parallel port function control	Enable/Disable by BIOS Setup
Supports ECP/EPP	Yes (set by BIOS setup)
Optional ECP DMA channel (in BIOS Setup)	DMA channel 3 and 1
Optional parallel port I/O address (in BIOS Setup)	378, 278
Optional parallel port IRQ (in BIOS Setup)	IRQ7, IRQ5

USB Port

Item	Specification
USB Compliancy Level	1.1, 2.0
OHCI	USB 1.1, 2.0
Number of USB port	3
Location	Rear side
Serial port function control	Enable/Disable by BIOS Setup

IrDA Port

Item	Specification
IrDA FIR port controller	NS SIO PC87392
Number of IrDA FIR port	1
Location	Left side
IrDA FIR port function control	Enable/disable by BIOS Setup
IrDA FIR port (in BIOS Setup)	2F8, 3F8, 3E8, 2E8
IrDA FIR port IRQ (in BIOS Setup)	IRQ3, IRQ4
ECP DMA channel (in BIOS Setup)	DMA channel 1 and 3
Optional IrDA FIR port DRQ (in BIOS Setup)	Not available

PCMCIA Port

Item	Specification
PCMCIA controller	TI PCI1510
Supports card type	Type-II
Number of slots	One Type-II
Access location	Left side
Supports ZV (Zoomed Video) port	No ZV support
Supports 32 bit CardBus	Yes (IRQ11)

System Board Major Chips

Item	Controller
System core logic	Intel Montara GME Intel ICH4-M
Super I/O controller	NS PC87392
Audio controller	Cirrus 4299-XQ
Video controller	Intel Montara GME
Hard disk drive controller	Intel ICH4-M
Keyboard controller	Mitsubishi M38857
RTC	Intel ICH4-M

Keyboard

Item	Specification
Keyboard controller	Mitsubishi M38857
Keyboard vendor & model name	Darfon
Total number of keypads	84/85/86/87 international language key
Windows 95 keys	Yes
Internal & external keyboard work simultaneously	Yes

Battery

Item	Specification
Vendor & model name	Sanyo BTP-52EW
Battery Type	Li-Ion
Pack capacity	4400 mAH
Cell voltage	V/cell
Number of battery cell	8
Package configuration	4 cells in series, 2 in parallel
Package voltage	14.8 V

DC-AC LCD Inverter

Item		Specification				
Vendor & model name		Ambit T62I194.06				
		Sumida TWS-458-017				
Input voltage (V)	Ambit	8.5 (min.)		-		21 (max.)
	Sumida	-		12 (typ.)		-
Input current (mA)	Ambit	-		-		1 (max.)
	Sumida	310(min.)		360(typ.)		410(max.)
Output voltage (Vrms, no load)	Ambit	-		600 (typ.)		-
	Sumida	1600(min.)		-		-
Output voltage frequency (kHz)	Ambit	40 (min.)		-		70 (max.)
	Sumida	50(min.)		54(typ.)		58(max.)
Output Current/Lamp		Iout(Min)	0mA	0.6mA	1.2mA	Vadj=0V
		Iout(Max)	5.5mA	6.0mA	6.5mA	Vadj=3V

NOTE: DC-AC inverter is used to generate very high AC voltage, then support to LCD CCFT backlight user, and is also responsible for the control of LCD brightness. Avoid touching the DC-AC inverter area while the system unit is turned on.

NOTE: There is an EEPROM in the inverter, which stores its supported LCD type and ID code. If you replace a new inverter or replace the LCD with a different brand, use Inverter ID utility to update the ID information.

LCD

Item	Specification		
Vendor & model name	IDT I-77C-02	LG LP150X05	AU Optronics B150PG01
Mechanical Specifications			
LCD display area (diagonal, inch)	14.1	15	15
Display technology	TFT	TFT	TFT
Resolution	XGA (1024x768)	XGA (1024x768)	SXGA (1400x1050)
Supports colors	262K	262K	262K
Optical Specification			
Brightness control	Keyboard hotkey	Keyboard hotkey	Keyboard hotkey
Contrast control	No	No	No
Electrical Specification			
Supply voltage for LCD display (V)	3.3	3.3	3.3

AC Adapter

Item	Specification
Vendor & model name	Delta ADP-65DB
Input Requirements	
Maximum input current (A, @90Vac, full load)	1.5 A @ 90Vac 0.9 A @ 180Vac
Nominal frequency (Hz)	47 - 63
Frequency variation range (Hz)	47 - 63
Nominal voltages (Vrms)	90 - 270
Inrush current	The maximum inrush current will be less than 50A and 100A when the adapter is connected to 100Vac(50Hz) and 240Vac(60Hz) respectively.
Efficiency	It should provide an efficiency of 85% minimum, when measured at maximum load under 240V(60Hz).
Output Ratings (CV mode)	
DC output voltage	+19.0V~21.5V
Noise + Ripple	300mvp-pmax (20MHz bandwidth)
Load	0 A (min.) 3.42 A (max.)
Output Ratings (CC mode)	
DC output voltage	+12V ~ +19V
Constant output	4.5 ± 0.3 A
Dynamic Output Characteristics	
Turn-on delay time	3 sec. (@100Vac)
Hold up time	6 ms min. (@100 Vac input, full load)
Over Voltage Protection (OVP)	25 V
Short circuit protection	Output can be shorted without damage (no broken, no smoke)
Electrostatic discharge (ESD)	15kV (at air discharge) 8kV (at contact discharge)
Dielectric Withstand Voltage	
Primary to secondary	1500 Vac (or 2121 Vdc), 10 mA for 1 second
Leakage current	0.25 mA max. (@ 254 Vac, 60Hz)
Regulatory Requirements	Internal filter meets: 1. FCC class B requirements. (USA) 2. VDE 243/1991 class B requirements. (German) 3. CISPR 22 Class B requirements. (Scandinavia) 4. VCCI class II requirements. (Japan)

Power Management

Power Saving Mode	Phenomenon
Standby Mode Waiting time specified by the System Standby value or the operating system elapses without any system activity. Or When the computer is about to enter Hibernation mode (e.g., during a battery-low condition), but the Hibernation file is invalid or not present.	❑ The Sleep indicator lights up
Hibernation Mode When customized functions for power management are set to **Hibernation** and the corresponding action is taken.	❑ All power shuts off
Display Standby Mode Keyboard, built-in touchpad, and an external PS/2 pointing device are idle for a specified period.	❑ The display shuts off
Hard Disk Standby Mode Hard disk is idle within a specified period of time.	❑ Hard disk drive is in standby mode. (spindle turned-off)

Environmental Requirements

Item	Specification
Temperature	
Operating	+5~+35 °C
Non-operating	-10~+65 °C
Non-operating	-20~+65 °C (storage package)
Humidity	
Operating	20% to 80% RH, non-condensing
Non-operating	20% to 80% RH, non-condensing (unpacked)
Non-operating	20% to 90% RH, non-condensing (storage package)
Vibration	
Operating (unpacked)	5~250Hz: 0.5Grms
Non-operating (unpacked)	2-200Hz: 0.5Grms
Non-operating (packed)	2-200Hz: 1.146Grms

Mechanical Specification

Item	Specification
Dimensions	326 (W) x 270 (D) x 29.8 (H) mm for 15.0” TFT
Weight	5.73 lbs for 15.0” TFT model
I/O Ports	One Type II/I CardBus socket, One RJ-11 modem port, One RJ-45 LAN port, One DC-in jack (AC adapter), One FIR port (option), One ECP/EPP compliant parallel port, One external monitor port, One S-Video out port, Three USB ports, One audio line-out jack, One microphone-in jack, One 1394 port, One key lock.
Drive Bays	One
Material	Housing: MCS-050 Panel : Plastic
Indicators	Wireless Communication, Power LED, Sleep LED, Media Activity, Battery Charge, Caps Lock, Num Lock
Switch	Power

Memory Address Map

Memory Address	Size	Function
F0000-FFFFFh	64KB	System BIOS
E0000-EFFFFh	64KB	Extended BIOS
D0000-DFFFFh	64KB	I/O ROM
C0000-CCBFFh	51KB	VGA BIOS
A0000-BFFFFh	128KB	Video memory
00000-09FFFFh	640KB	Conventional memory

I/O Address Map

I/O Address	Function
00000000-00000CF7	PCI bus
00000000-0000001F	Direct memory access controller
00000020-00000021	Programmable interrupt controller
00000024-00000025	Programmable interrupt controller
00000028-00000029	Programmable interrupt controller
0000002C-0000002D	Programmable interrupt controller
0000002E-0000002F	Motherboard resources
00000030-00000031	Programmable interrupt controller
00000034-00000035	Programmable interrupt controller
00000038-00000039	Programmable interrupt controller
0000003C-0000003D	Programmable interrupt controller
00000040-00000043	System timer
00000050-00000053	System timer
00000060-00000060	Standard 101/102-key or Microsoft natural PS/2 keyboard
00000061-00000061	Motherboard resources
00000062-00000062	Microsoft ACPI-compliant Embedded controller
00000063-00000063	Motherboard resources
00000064-00000064	Standard 101/102-key or Microsoft natural PS/2 keyboard
00000065-00000065	Motherboard resources
00000066-00000066	Microsoft ACPI-compliant embedded controller
00000067-00000067	Motherboard resources

I/O Address Map

I/O Address	Function
00000070-00000077	System CMOS/real time clock
00000080-00000080	Motherboard resources
00000081-0000008F	Direct memory access controller
00000090-00000091	Direct memory access controller
00000092-00000092	Motherboard resources
00000093-0000009F	Direct memory access controller
000000A0-000000A1	Programmable interrupt controller
000000A4-000000A5	Programmable interrupt controller
000000A8-000000A9	Programmable interrupt controller
000000AC-000000AD	Programmable interrupt controller
000000B0-000000B1	Programmable interrupt controller
000000B2-000000B3	Programmable interrupt controller
000000B4-000000B5	Programmable interrupt controller
000000B8-000000B9	Programmable interrupt controller
000000BC-000000BD	Programmable interrupt controller
000000C0-000000DF	Direct memory access controller
000000F0-000000F0	Numeric data processor
00000170-00000177	Secondary IDE channel
000001F0-000001F7	Primary IDE channel
00000274-00000277	ISAPNP read data port
00000279-00000279	ISAPNP read data port
000002F8-000002FF	IrDA fast infrared port
00000376-00000376	Secondary IDE channel
00000378-0000037F	Printer port (LPT1)
000003B0-000003BB	Intel(R) 82852/82855 GM/GME graphics controller
000003C0-000003DF	Intel(R) 82852/82855 GM/GME graphics controller
000003E0-000003E1	Generic CardBus Controller
000003F6-000003F6	Primary IDE channel
000004D0-000004D1	Programmable interrupt controller
00000600-0000060F	Motherboard resources
00000700-0000070F	Motherboard resources
00000800-0000080F	Motherboard resources
00000820-00000827	Winbond secure digital storage (SD/MMC) device driver
00000840-00000847	Winbond memory stick storage (MS) device driver
00000A79-00000A79	ISAPNP read data port
00000D00-0000FFFF	PCI bus
00001000-0000107F	Motherboard resources
00001180-000011BF	Motherboard resources
00001800-00001807	Intel(R) 82852/82855 GM/GME Graphics Controller
00001810-0000181F	Intel(R) 82801DBM Ultra ATA storage controller-24CA
00001820-0000183F	Intel(R) 82801DB/DBM USB universal host controller-24C2
00001840-0000185F	Intel(R) 82801DB/DBM USB universal host controller-24C4
00001860-0000187F	Intel(R) 82801DB/DBM USB universal host controller-24C7
00001880-0000189F	Intel(R) 82801DB/DBM SMBus controller-24C3
000018C0-000018FF	Crystal WDM AC'97 driver for ICH4

I/O Address Map

I/O Address	Function
00001C00-00001CFF	Crystal WDM AC'97 driver for ICH4
00002000-0000207F	Agere systems AC'97 modem
00002400-000024FF	Agere systems Ac'97 modem
0000FE00-0000FEFF	Generic CardBus controller
0000FF00-0000FFFF	Generic CardBus controller

IRQ Assignment Map

Interrupt Channel	Function
IRQ0	System timer
IRQ1	Keyboard
IRQ2	Cascade
IRQ3	IrDA fast infrared port #2
IRQ4	Reserved for PCMCIA R2 card
IRQ5	Winbond memory stick storage (MS) device driver
IRQ6	Winbond secure digital storage (SD/MMC) device driver
IRQ7	LPT (Parallel port)
IRQ8	System CMOS/real time clock
IRQ9	Microsoft ACPI-compliant system
IRQ10	SMBus (PIRQB#), Audio (PIRQB#), Modem (PIRQB#), LAN (PIRQE#), CardBus (PIRQF#), IEEE1394 (PIRQF#), MiniPCI (PIRQG#)
IRQ11	USB1.1 (PIRQA#, PIRQC#, PIRQD#), VGA (PIRQA#), USB2.0 (PIRQH#)
IRQ12	PS/2 port touchpad
IRQ13	Math processor
IRQ14	Primary IDE channel
IRQ15	Secondary IDE channel

DMA Channel Assignment

DMA Channel	Function
DRQ0	Reserved
DRQ1	Reserved
DRQ2	Reserved
DRQ3	IrDA FIR
DRQ4	DMA controller
DRQ5	Reserved
DRQ6	Reserved
DRQ7	Reserved

System Utilities

BIOS Setup Utility

The BIOS Setup Utility is a hardware configuration program built into your computer's BIOS (Basic Input/ Output System).

Your computer is already properly configured and optimized, and you do not need to run this utility. However, if you encounter configuration problems, you may need to run Setup. Please also refer to Chapter 4 Troubleshooting when problem arises.

To activate the BIOS Utility, press F2 during POST

PhoenixBIOS Setup Utility					
Information	Main	Advanced	Security	Boot	Exit
CPU Type	Intel(R) Pentium(R) M processor 1300MHz				
System Memory	640 KB				
Extended Memory	xxxxxx KB				
HDD1 Serial Number	xxxxxxxxxxxx				
System BIOS Version	R01-xxx				
VGA BIOS Version	xxxxxx				
KBC Version:	02.13.xx				
Serial Number	xxxxxxxxxxxx				
Asset Tag Number	xxxxxxxxxxxx				
Product Name	xxxxxxxxxxxx				
Manufacture Name	xxxxxxx				
UUID Number	xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx				
F1 Help	↑↓ Select Item	**F5/F6** Change Values		**F9** Setup Defaults	
Esc Exit	←→ Select Menu	**Enter** Select ➢ Sub-Menu		**F10** Save and Exit	

Navigating the BIOS Utility

There are six menu options: System Information, Main System Settings, Advanced, System Security, Boot Options and Exit Setup.

To enter a menu, highlight the item using the ↑ / ↓ keys, then press ENTER .

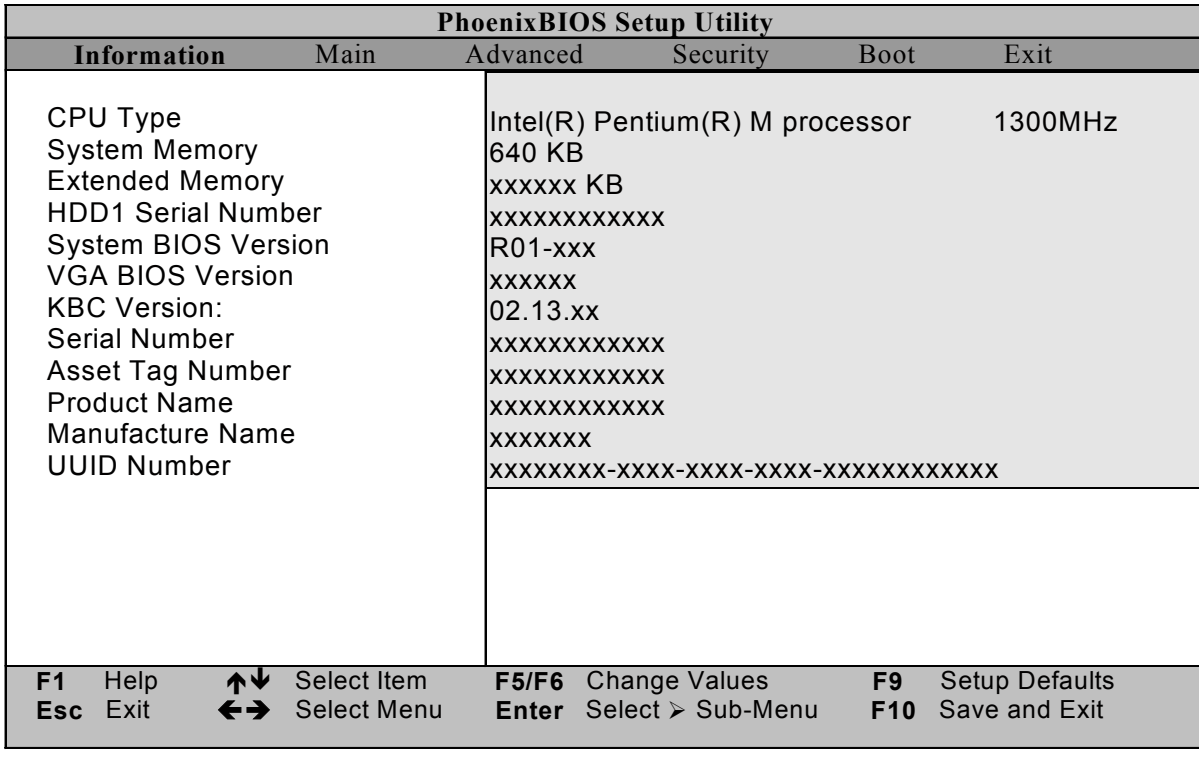
Within a menu, navigate through the BIOS Utility by following these instructions:

- Press the ↑ / ↓ keys to move between the parameters.
- Press the ← / → keys to change the value of a parameter.
- Press the ESC key while you are in any of the menu options to return to the main menu.

NOTE: You can change the value of a parameter if it is enclosed in square brackets. Navigation keys are shown at the bottom of the screen.

System Information

The System Information screen displays a summary of your computer hardware information.



The items in this screen are important and vital information about your computer. If you experience computer problems and need to contact technical support, this data helps our service personnel know more about your computer.

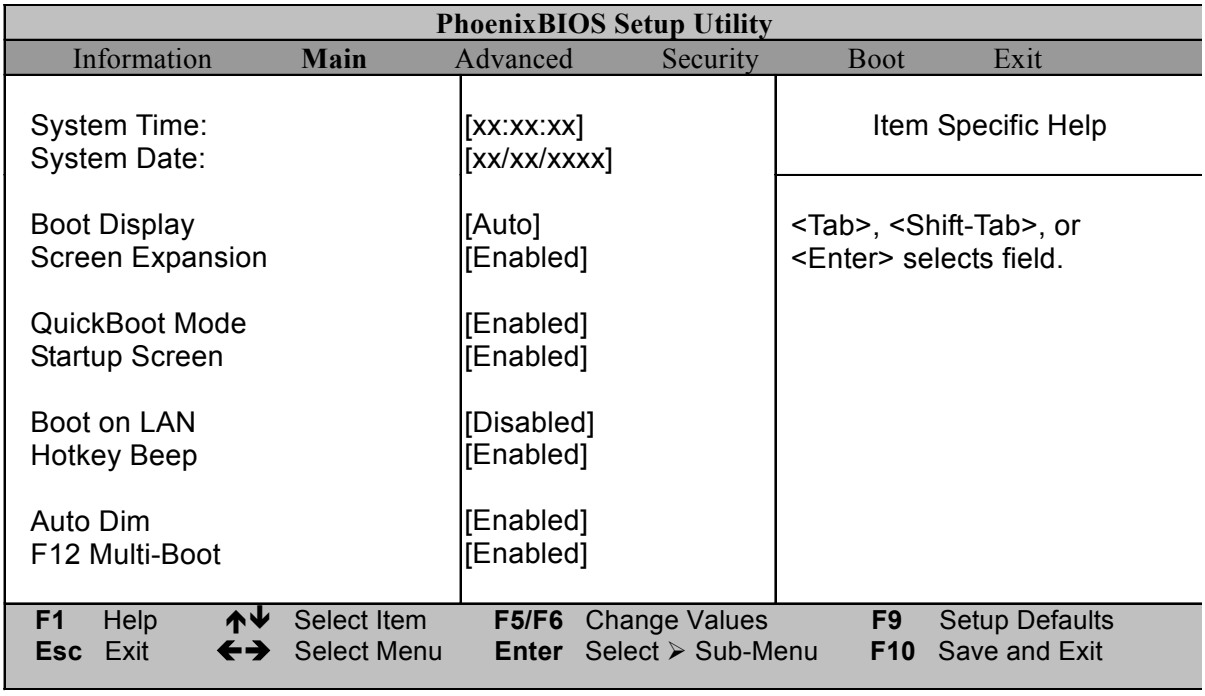
NOTE: The screen above is a sample and may not reflect the actual data on your computer. “X” may refer to a series of numbers and/or characters.

The following table describes the information in this screen.

Parameter	Description
CPU Type	Display the type of CPU and its speed.
System Memory	Display the current system memory.
Extended Memory	Display the current extended memory
HDD1 Serial Number	Display the primary master HDD serial number. If no primary master HDD, show ‘None’.
System BIOS Version	The current system BIOS version
VGA BIOS Version	The current VGA BIOS version. It is got from VGA BIOS AX=5F01.
KBC Version	The current KBC version.
Serial Number	Display the serial number of the computer. (30 characters)
Asset Tag Number	Display the asset tag number of the computer. (32 characters)
Product Name	Display the Product Name. (15 characters)
Manufacturer Name	Display the manufacturer Name (15 characters)
UUID Number	Display the universally unique identifier of your computer. (16 Byte Hex digital)

Main System Settings

The Main System Settings screen allows you to set the system date and time.



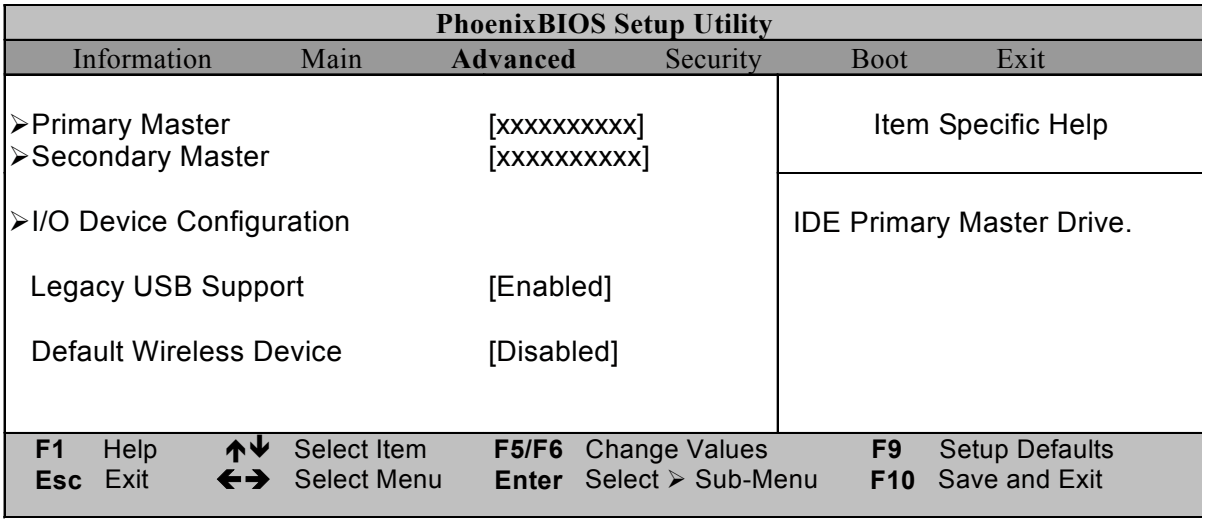
The following table describes the parameters in this screen.

Parameter	Description	Options
System Time	Sets the system time Format: HH:MM:SS (Hour: Minute: Second) *Help:* <Tab>,<Shft-Tab>, or <Enter> selects field.	
System Date	Sets the system date. Format: MM/DD/YYYY (Month/Day/Year) *Help:* <Tab>, <Shift>, or <Enter> selects field.	
Boot Display	Set the display output device on boot up. When set to Auto, the computer automatically determines the display device. If an external display device (e.g., monitor) is connected, it becomes the boot display.	**Auto** LCD Only CRT Only
Screen Expansion	Expand the display screen on boot up .	**Enabled** Disabled
QuickBoot Mode	Allow the system to skip certain tests while booting. This will decrease the time needed to boot the system.	**Enabled** Disabled
Startup Screen	Enable to show the graphic picture screen on boot up.	**Enabled** Disabled
Boot on LAN	When set to enabled, system will boot on LAN. Notice: Need to restart system for enabling Boot-on-LAN function.	**Disabled** Enabled
Hotkey Beep	Enable or disable hotkey beep.	**Enabled** Disabled

Parameter	Description	Options
Auto Dim	The system will support an automatic dim in of the LCD backlight when the AC power is NOT available (running on battery power).	**Enabled** Disabled
F12 Multi-Boot	Users could choose if to display 'Fn-F12 for multi-boot' message during post	**Enabled** Disabled

Advanced Information

The Advanced Information screen contains parameter values that define how your computer behaves on system startup.



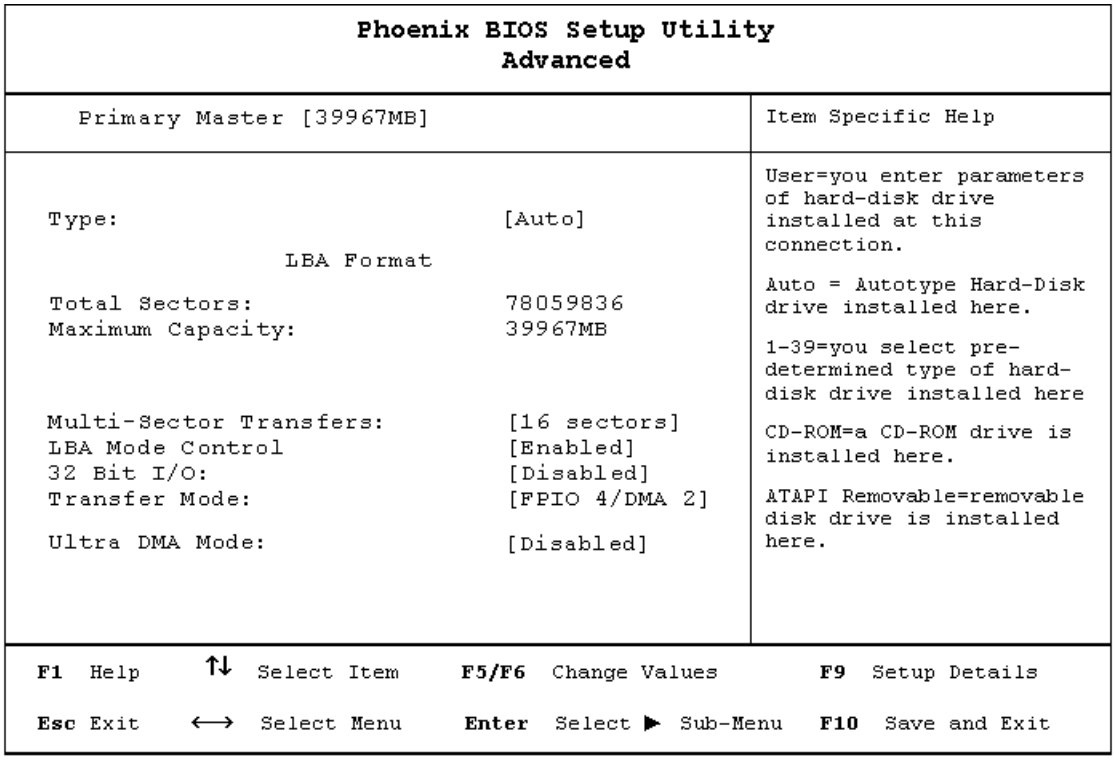
The following table describes the parameters in this screen. Settings in boldface are the default and suggested parameter settings.

Parameter	Description	Options
Primary Master	Show IDE Primary Master device status. User can enter submenu to set some detail functions.	
Secondary Master	Show IDE Secondary Master device status. User can enter submenu to set some detail functions.	
I/O Device Configuration	Enter submenu to set onboard device configuration. *Help: Peripheral Configuration*	
Legacy USB Support	Enable support for legacy USB.	**Enabled** or Disabled
Default Wireless Device	Select default wireless device when system boots up. User may select preferred device as default wireless device, or disable all wireless device to prevent unnecessary RF signals. For the model without wireless LAN, the corresponding item should be hidden. *Help: Select Default Wireless Device when system boots up.*	**Disabled** Enabled

Primary Master

The Primary Master sub-menu contains parameters related to the primary hard disk.

CAUTION: The parameters in this screen are for the advanced users only. Typically, you do not need to change the values in this screen. The default setting of **Auto** optimizes all the settings for your hard disk.


Phoenix BIOS Setup Utility
Advanced
Primary Master [39967MB]
Item Specific Help
Type: [Auto]
LBA Format
Total Sectors: 78059836
Maximum Capacity: 39967MB
Multi-Sector Transfers: [16 sectors]
LBA Mode Control [Enabled]
32 Bit I/O: [Disabled]
Transfer Mode: [FPIO 4/DMA 2]
Ultra DMA Mode: [Disabled]
User=you enter parameters of hard-disk drive installed at this connection.
Auto = Autotype Hard-Disk drive installed here.
1-39=you select pre-determined type of hard-disk drive installed here
CD-ROM=a CD-ROM drive is installed here.
ATAPI Removable=removable disk drive is installed here.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Details
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

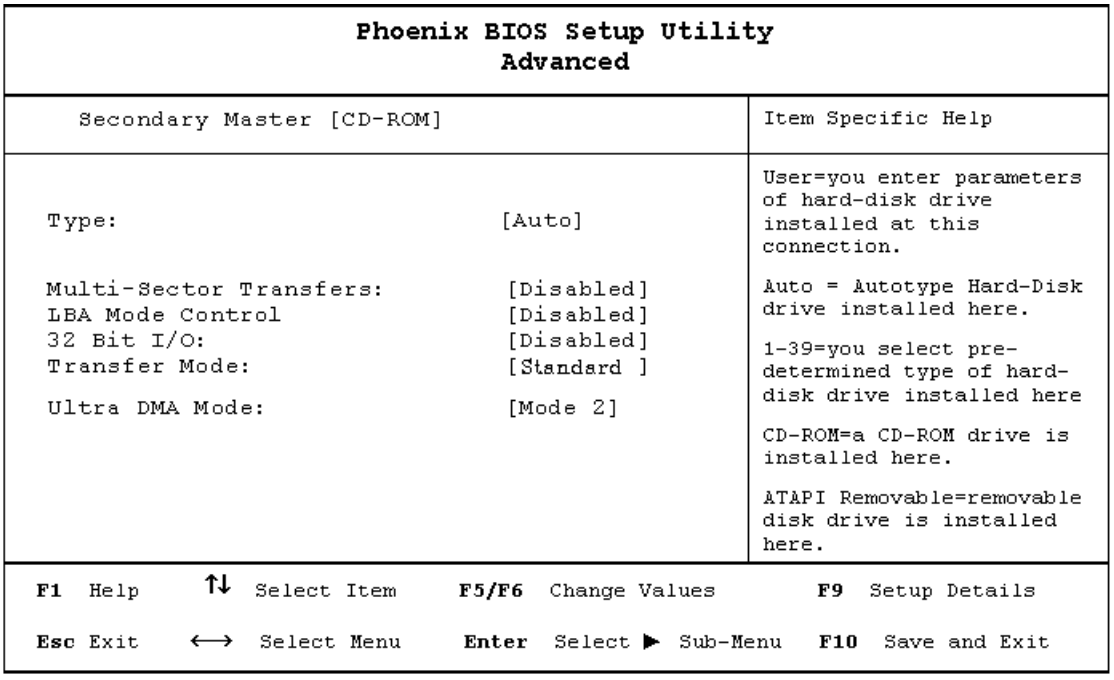
Parameter	Description	Options
Type	The setting of detail functions stands on type *Help:* Auto = Autotype Hard-Disk drive installed here. User = You enter parameters of hard-disk drive installed at this connection. Other ATAPI = another ATAPI device is installed here. IDE Removable = another IDE removable device is installed here. CD-ROM = a CD-ROM drive is installed here. ATAPI Removable = another ATAPI removable device is installed here. None = no device is installed here.	**Auto** User Other ATAPI IDE Removable CD-ROM ATAPI Removable None
Multi-Sector Transfers	Specify the number of sectors per block for multiple sector transfers.	**16 Sectors** Disabled 8 Sectors 4 Sectors 2 Sectors
LBA Mode Control	Enabling LBA causes Logical Block Adddressing to be used in place of Cylinders, Heads and Sectors.	**Enabled** Disabled

Parameter	Description	Options
32 Bit I/O	The setting of 32 bit IDE data transfers .	**Disabled** Enabled
Transfer Mode	Select the method for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.	**EPIO 4/DMA 2** Standard FPIO 3/DMA 1 Fast PIO 4 Fast PIO 3 Fast PIO 2 Fast PIO 1
Ultra DMA Mode	Selects the Ultra DMA mode used for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.	**Disabled** Mode 5 Mode 4 Mode 3 Mode 2 Mode 1 Mode 0

Secondary Master

The Secondary Master sub-menu contains parameters related to the Media bay drive.

CAUTION: The parameters in this screen are for the advanced users only. Typically, you do not need to change the values in this screen. The default setting of Auto optimizes all the settings for your Media bay drive.


Phoenix BIOS Setup Utility
Advanced
Secondary Master [CD-ROM]
Item Specific Help
Type: [Auto]
Multi-Sector Transfers: [Disabled]
LBA Mode Control [Disabled]
32 Bit I/O: [Disabled]
Transfer Mode: [Standard]
Ultra DMA Mode: [Mode 2]
User=you enter parameters of hard-disk drive installed at this connection.
Auto = Autotype Hard-Disk drive installed here.
1-39=you select pre-determined type of hard-disk drive installed here
CD-ROM=a CD-ROM drive is installed here.
ATAPI Removable=removable disk drive is installed here.
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Details
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

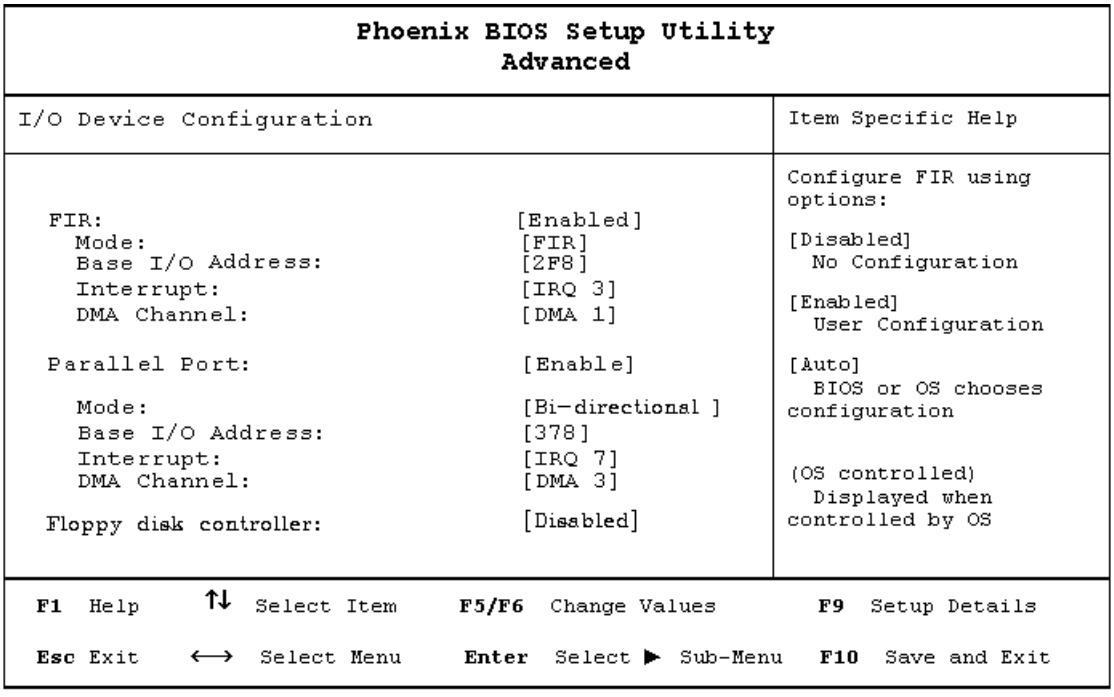
Parameter	Description	Options
Type	The setting of detail functions stands on type *Help:* Auto = Autotype Hard-Disk drive installed here. User = You enter parameters of hard-disk drive installed at this connection. Other ATAPI = another ATAPI device is installed here. IDE Removable = another IDE removable device is installed here. CD-ROM = a CD-ROM drive is installed here. ATAPI Removable = another ATAPI removable device is installed here. None = no device is installed here.	**Auto** User Other ATAPI IDE Removable CD-ROM ATAPI Removable None
Multi-Sector Transfers	Specify the number of sectors per block for multiple sector transfers.	**Disabled** 16 Sectors 8 Sectors 4 Sectors 2 Sectors
LBA Mode Control	Enabling LBA causes Logical Block Adddressing to be used in place of Cylinders, Heads and Sectors.	**Disabled** Enabled
32 Bit I/O	The setting of 32 bit IDE data transfers .	**Disabled** Enabled

Parameter	Description	Options
Transfer Mode	Select the method for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.	**Standard** EPIO 4/DMA 2 FPIO 3/DMA 1 Fast PIO 4 Fast PIO 3 Fast PIO 2 Fast PIO 1
Ultra DMA Mode	Selects the Ultra DMA mode used for moving data to/from the drive. Autotype the drive to select the optimum transfer mode.	**Mode 2** Disabled Mode 5 Mode 4 Mode 3 Mode 1 Mode 0

I/O Device Configuration

The parameters in this screen are for advanced users only. You do not need to change the values in this screen because these values are already optimized.

The I/O Device Configuration screen assigns resources to basic computer communication hardware.


Phoenix BIOS Setup Utility
Advanced
I/O Device Configuration
Item Specific Help
FIR: [Enabled]
Mode: [FIR]
Base I/O Address: [2F8]
Interrupt: [IRQ 3]
DMA Channel: [DMA 1]
Parallel Port: [Enable]
Mode: [Bi-directional]
Base I/O Address: [378]
Interrupt: [IRQ 7]
DMA Channel: [DMA 3]
Floppy disk controller: [Disabled]
Configure FIR using options:
[Disabled] No Configuration
[Enabled] User Configuration
[Auto] BIOS or OS chooses configuration
(OS controlled) Displayed when controlled by OS
F1 Help ↑↓ Select Item F5/F6 Change Values F9 Setup Details
Esc Exit ↔ Select Menu Enter Select ▶ Sub-Menu F10 Save and Exit

The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

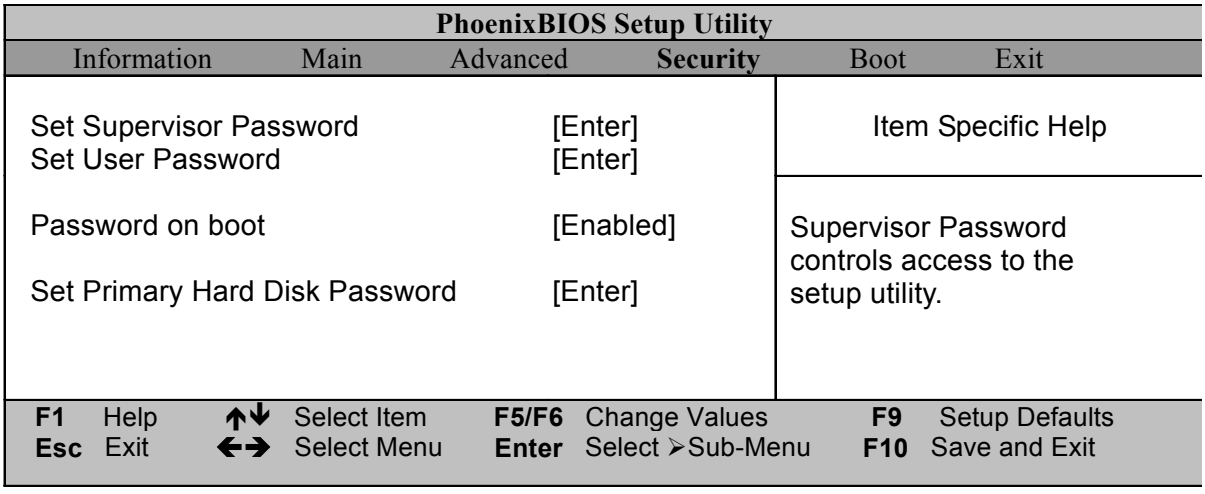
NOTE: When the device is disabled, all the sub-items will be showed as [--].

Parameter	Description	Options
FIR	Enables or disables the infrared port. The infrared port is a PnP device. Enabled/Disabled setting won't affect the setting of the infrared port in device manager of Windows. Configure FIR using options: Disabled: No configuration Enabled: User configuration Auto: BIOS or OS chooses configuration	**Enabled** Disabled Auto
Mode		FIR
Base I/O Address	Set the base I/O address for FIR.	**2F8** 3F8 3E8 2E8
Interrupt	Set the interrupt for FIR.	**IRQ 3** IRQ 4
DMA Channel	Set the DMA channel for FIR.	**DMA 1** DMA 3

Parameter	Description	Options
Parallel Port	Enables or disable the parallel port. The parallel port is a PnP device. Enabled/Disabled setting won't affect the Windows Device Manager setting of the parallel port. Configure Parallel Port using options: Disabled: No configuration Enabled: User configuration Auto: BIOS or OS chooses configuration	**Enabled** Disabled Auto
Mode	Set the mode for the parallel port using options. If operation mode is set to ECP DMA channel, sets the direct memory access (DMA) channel for the printer to operate in ECP mode. This parameter is enabled only if operation mode is set to ECP.	**Bi-directional** EPP ECP Output only
Base I/O Address	Set the base I/O address for the parallel port.	**378** 278
Interrupt	Set the interrupt for the parallel port.	**IRQ 7** IRQ 5
DMA Channel	Set the DMA channel for the parallel port.	**DMA 3** DMA 1
Floppy disk controller	Configure using these options: Disabled: No configuration Enabled: User configuration Auto: BIOS or OS chooses configuration	**Disabled** Enabled Auto

System Security

The System Security screen contains parameters that help safeguard and protect your computer from unauthorized use.



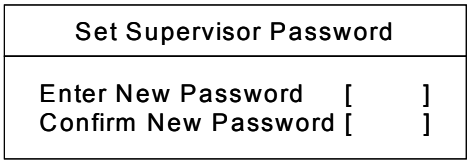
The following table describes the parameters in this screen. Settings in **boldface** are the default and suggested parameter settings.

Parameter	Description	Options
Set Supervisor Password	While entering SETUP, BIOS need to request user to enter supervisor password if set. This password protects the BIOS SETUP menu from unauthorized modification. *Help*: Supervisor Password controls accessing the whole setup utility. It can be used to boot up when Password on boot is enabled.	**Enter**
Set User Password	During POST, BIOS need to check user password if set. This password protects the system from unauthorized user entry before OS boots up. *Help*: User Password controls accessing part of the setup utility. It can be used to boot up when Password on boot is enabled.	**Enter**
Password on boot	Enable or disable password entry on boot up.	**Enabled** or Disabled
Set Primary Hard Disk Password	This password protects the internal hard disk to prevent from any unauthroized access. When there is no hard disk existance, this item should be hidden. If S/W jumper: Hide HDD Password is Enabled, this item should be hidden. *Help*: Input HDD Password to prevent from any unauthorized access to the internal hard disk.	**Enter**

Setting a Password

Follow these steps:

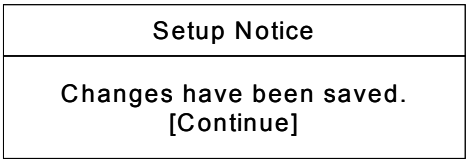
1. Use the cursor ↑/↓ keys to highlight a Password parameter (Supervisor Password, User Password, or Primary Hard Disk Password) and press the ENTER key. The password box appears as below if choosing Set Supervisor Password:



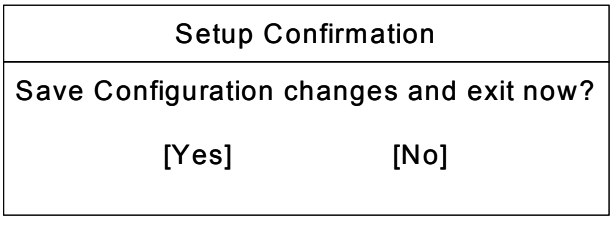
2. Type a password. The password may consist of up to eight characters (A-Z, a-z, 0-9) and then press ENTER .

IMPORTANT: Be very careful when typing your password because the characters do not appear on the screen.

3. Retype password to verify your first entry and then press ENTER . The following screen appears:



4. After setting the password, the computer automatically sets the chosen password parameter to Present.
5. Press ESC to return to the main menu.
6. Press F10. The following dialogue box appears.

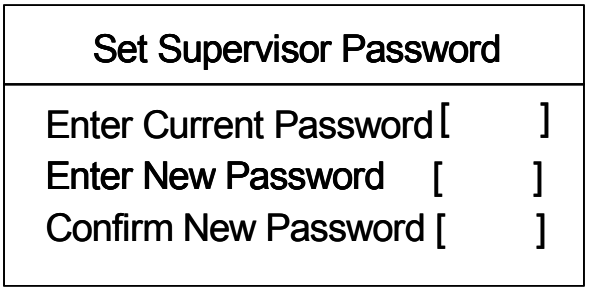


7. Select **Yes** and press ENTER to save the password and exit the BIOS utility.

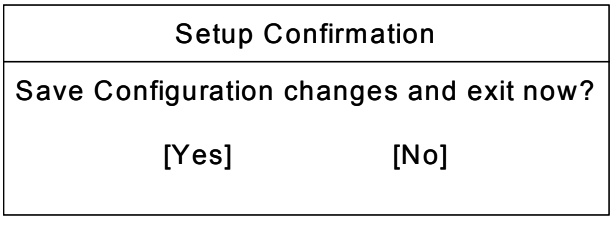
Removing a Password

Should you want to remove a password, do the following:

1. Use the cursor up/ down keys to highlight a password parameter (Setup, User or Hard Disk) and press the ENTER key. The password box appears.



2. Enter the current password and press ENTER .
3. Press ENTER twice without entering anything in the **Enter New Password** field and **Confirm New Password** field to remove the existing password.
4. Press ESC to return to the main menu.
5. Press F10 . The following dialogue box appears.



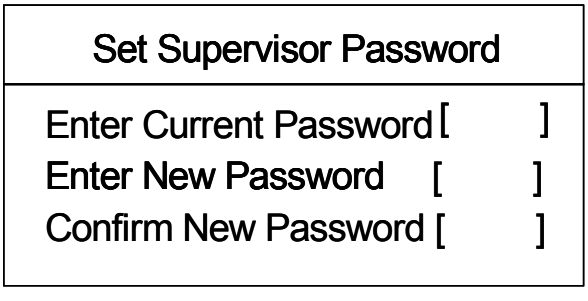
6. Select **Yes** and press ENTER to save the change and exit the BIOS utility.

Changing a Password

To change a password, follow these steps:

Follow these steps:

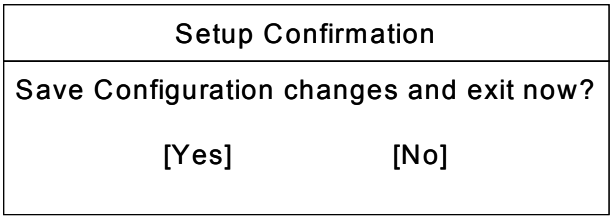
1. Use the cursor ↑ / ↓ keys to highlight the Password parameter (Setup, User or Hard Disk) and press the ENTER key. The password box appears:



2. Enter the current password and press ENTER .
3. Type the new password. The password may consist of up to eight characters (A-Z, a-z, 0-9).

IMPORTANT: Be very careful when typing your password because the characters do not appear on the screen.

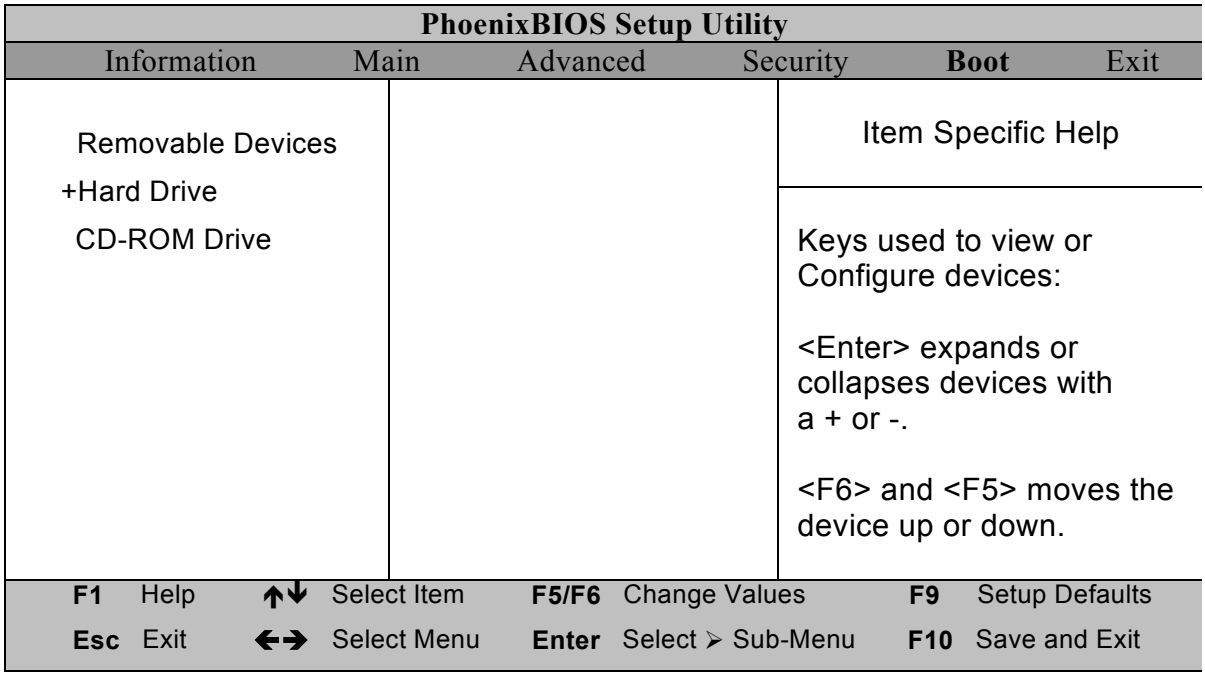
4. Press ENTER . Retype the password to verify your first entry and press ENTER .
5. Press ESC to return to the main menu.
6. Press F10 . The following dialogue box appears.



7. Select **Yes** and press ENTER to save the password and exit the BIOS utility.

Boot Options

Users can press F12 during POST to enter the Boot Options Menu. In this menu users can change boot device without entering BIOS SETUP utility.



NOTE: There are three priorities that can let the user to specify the boot device sequence.

The priority of options from top to bottom is 1st, 2nd, 3rd.

If the Removable Device or Hard Drive option has multi devices, show '+' in front of option and show each device information.

If secondary Hard Disk exists, user can also choose it to Boot. If secondary hard Disk is nonexistence, hide the secondary Hard Disk option.

Help: Keys used to view or configure devices:

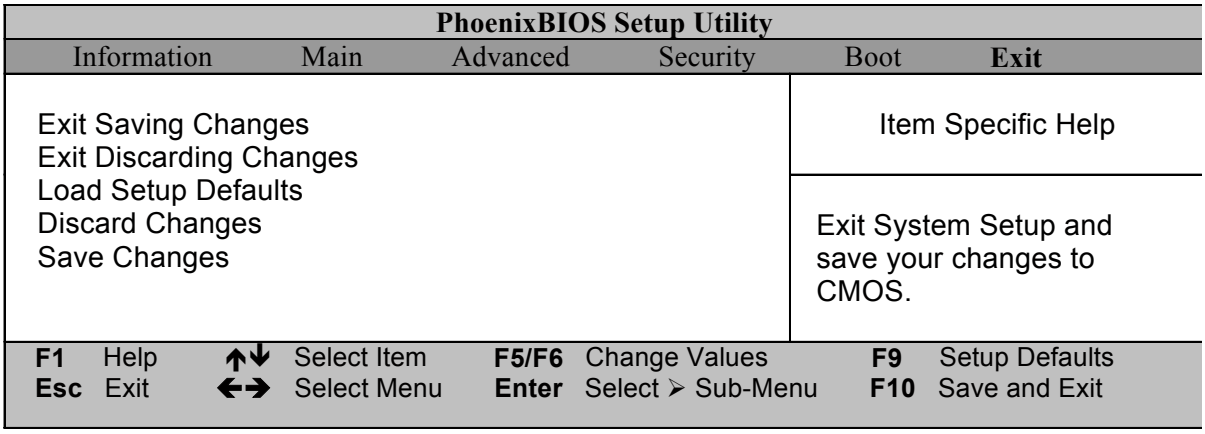
<ENTER> expands or collapses devices with a + or -

<SHIFT +1> enables or disables a device

<F5 >and <F6 > moves the device up and or down.

Exit Setup

This menu contains exit options.



The following table describes the parameters in this screen. Setting in **boldface** are the defaults and suggested parameter settings.

Parameter	Description
Exit Saving Changes	Save any changes, and exit BIOS setup. *Help:* Exit System Setup and save your changes to CMOS.
Exit Discarding Changes	Discard any changes, and exit BIOS setup. *Help:* Exit utility without saving Setup data to CMOS.
Load Setup Defaults	Load Setup Defaults. *Help:* Load default values for all SETUP items.
Discard Changes	Discard any changes. *Help:* Load previous values from CMOS for all SETUP items.
Save Changes	Save changes. *Help:* Save Setup data to CMOS.

BIOS Flash Utility

The BIOS flash memory update is required for the following conditions:

- ❑ New versions of system programs
- ❑ New features or options

Executing Flash Program

1. Create a bootable disk.
2. Unzip the flash file, and save the three files (.bat, .exe, .wph) to the bootable disk.
3. Follow the flashA.bat file's commands to flash BIOS.

IMPORTANT: Never turn off the system power while Flash BIOS is programming. This will damage your system.

4. After Flash BIOS is done, system will auto shut down.

NOTE: If there are any problems occurred during BIOS update, see for troubleshooting.

Machine Disassembly and Replacement

This chapter contains step-by-step procedures on how to disassemble the notebook computer for maintenance and troubleshooting.

To disassemble the computer, you need the following tools:

- Wrist grounding strap and conductive mat for preventing electrostatic discharge
- Flat screwdriver
- Phillips screwdriver
- Hex screwdriver
- Plastic flat screwdriver

NOTE: The screws for the different components vary in size. During the disassembly process, group the screws with the corresponding components to avoid mismatch when putting back the components.

General Information

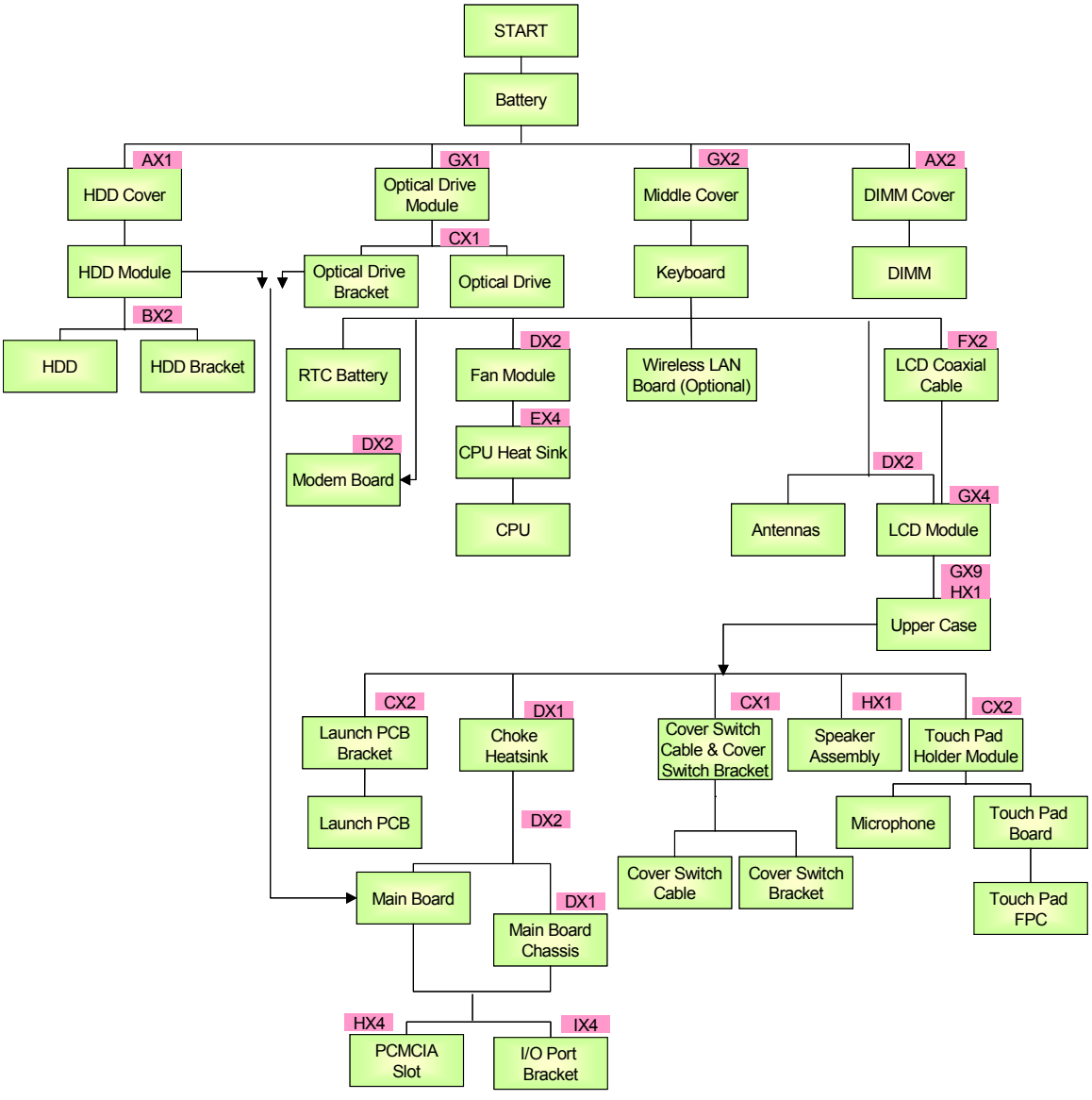
Before You Begin

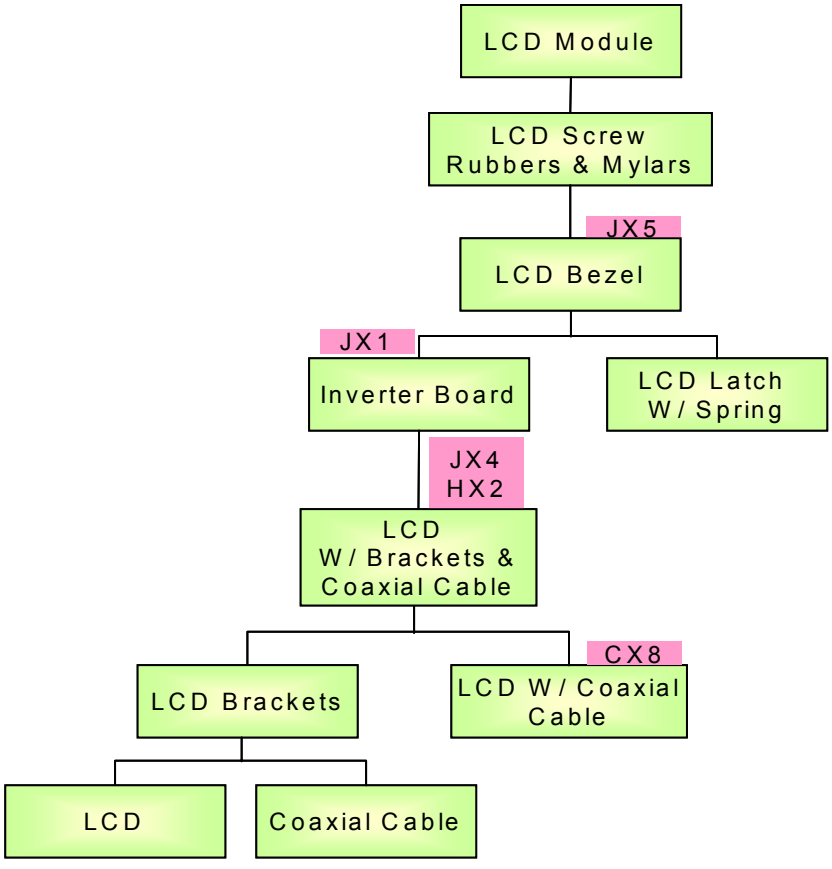
Before proceeding with the disassembly procedure, make sure that you do the following:

1. Turn off the power to the system and all peripherals.
2. Unplug the AC adapter and all power and signal cables from the system.
3. Remove the battery pack.

Disassembly Procedure Flowchart

The flowchart on the succeeding page gives you a graphic representation on the entire disassembly sequence and instructs you on the components that need to be removed during servicing. For example, if you want to remove the main board, you must first remove the keyboard, then disassemble the inside assembly frame in that order.



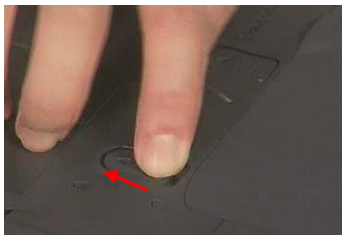


Screw List

Item	Description
A	SCREW DIMM COVER STEEL (BLACK)
B	SCREW M3X L2.8 (GOLDEN)
C	SCREW M2XL3 NYLOK (BLACK)
D	SCREW M2.5XL5 NYLOK (SILVER)
E	SPRING SCREW (SCREW)
F	SCREW M2.5XL10 (SILVER)
G	SCREW M2.5 X L8 (BLACK)
H	SCREW M2XL4 NYLOK (SILVER)
I	SCREW HEX W/ WASHER (SILVER)
J	SCREW M2.5XL5 NYLOK (BLACK)

Removing the Battery

1. Unlock the battery release button.

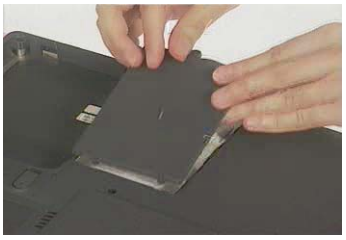


2. Push the other battery release button in the arrow direction and lift up the battery out from the main unit.

3. Remove the battery from the system.

Removing the Hard Disk Drive Module

1. See “Removing the Battery” on page 55
2. Remove the screw on the hard disk cover, and then remove the HDD cover.



3. Push the HDD module out by pulling the mylar, lift up the HDD module and remove it from the unit.

Disassembling the Hard Disk Drive Module

1. See “Removing the Battery” on page 55
2. See “Removing the Hard Disk Drive Module” on page 56
3. Remove the two screws as shown here, and then detach the HDD from the HDD bracket.

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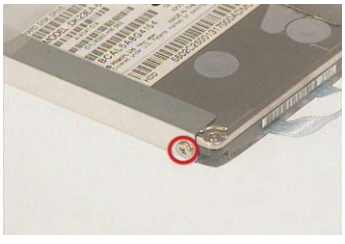
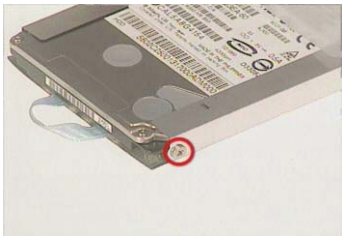
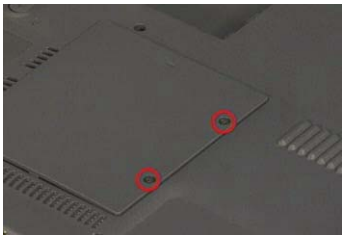



Removing the External DIMM Module

1. See “Removing the Battery” on page 55
2. Remove the two screws on the DIMM cover, then remove the DIMM cover from the lower case.



3. Push out the latches on both sides of the DIMM socket and then remove the DIMM module.

Removing the Optical Drive Module

1. See “Removing the Battery” on page 55
2. Remove the screw on the back side of the unit and pull gently to detach the optical drive module from the main unit .

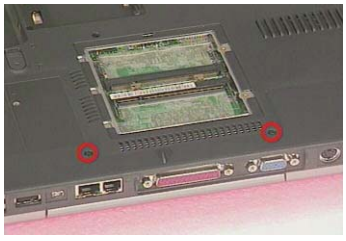
Disassembling the Optical Drive Module

1. See “Removing the Battery” on page 55
2. See “Removing the Optical Drive Module” on page 58
3. First remove the one screw as shown here, and then detach the optical drive bracket from the optical drive.

Disassembling the Main Unit

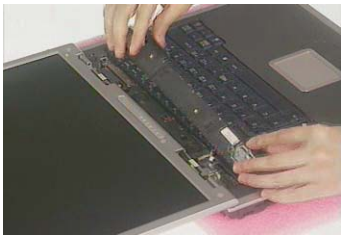
Removing the Middle Cover

1. See “Removing the Battery” on page 55
2. Remove the two screws. Push the middle cover outward on the right side, and lift it up gently in the way as shown.



3. Turn the middle over and put it on the keyboard. Disconnect the power PCB cable from the main board as shown.

4. Detach the middle cover from the main unit.



Removing the Keyboard

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. Lift the keyboard up, turn it over and put it on the upper case.

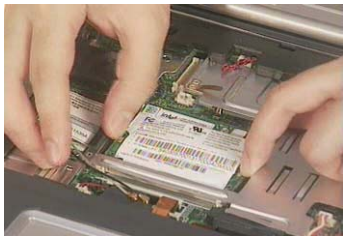
4. Disconnect the keyboard cable from the main board and remove the keyboard away.

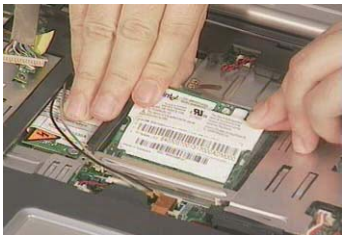
Removing the Wireless LAN Board (Optional)

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. Lift up the keyboard, turn it over and put it on the upper case.

4. Disconnect the two RF cables from the sockets on the wireless LAN board.

5. Press the latches on both sides of the socket, and then detach the wireless LAN board.





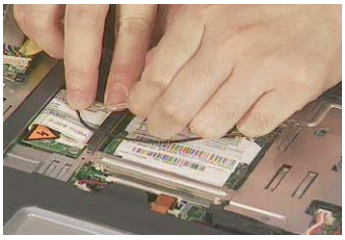
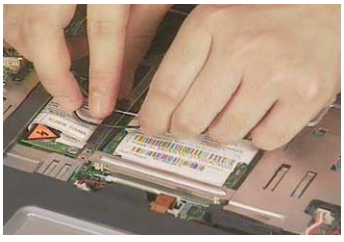
Removing the Antennas

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. Lift up the keyboard, turn it over and put it on the upper case.

4. Put the RTC battery aside.

5. Disconnect the two RF cables from the sockets on the wireless LAN board.

6. Release the two RF cables from the sponge.

7. The two RF cables are routed beneath the inverter cable and the coaxial cable. Thus, lift up the inverter cable first and then the coaxial cable before you release the two RF cables. Or you may choose to disconnect the inverter cable, remove the two screws on the coaxial cable, and then disconnect the coaxial cable from the main board.

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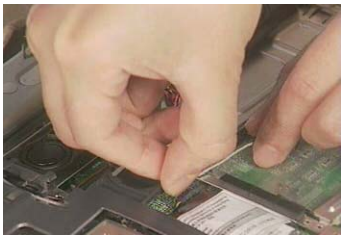
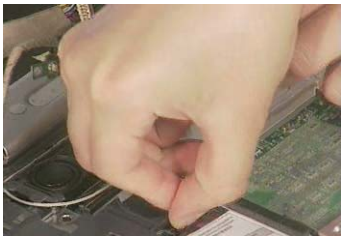
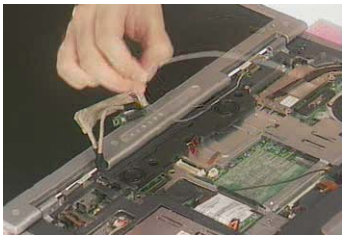
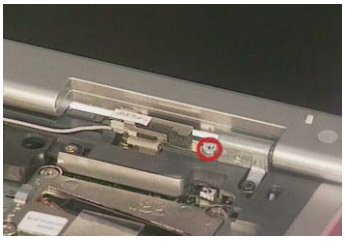
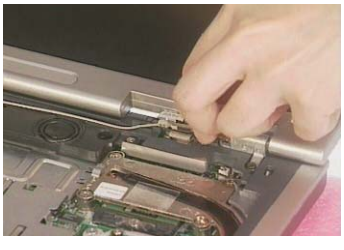
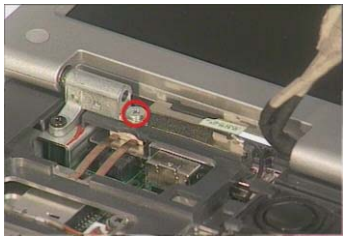
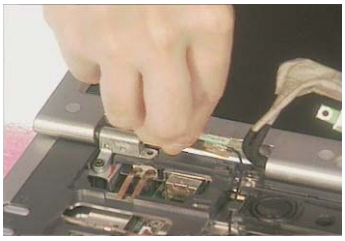
8. Pull the two RF cables out in the way as shown and release the right RF cable from the upper case.

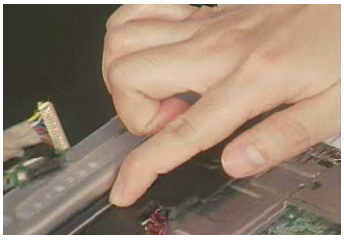
9. Remove the one screw and then detach the right antenna from the upper case.

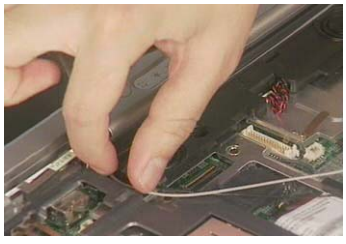
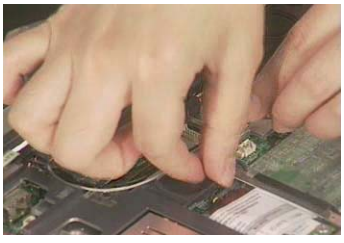



10. Remove the one screw and then detach the left antenna from the upper case.

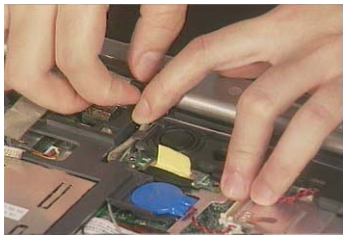



NOTE: 1. When attaching the antennas back to the upper case, make sure the two RF cables are routed as shown.

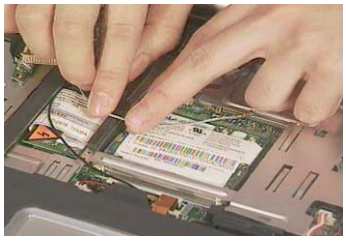
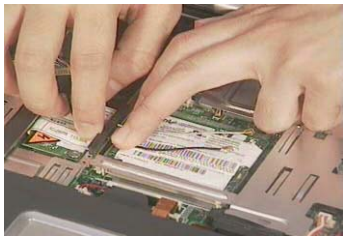


3. The two RF cables should be beneath the inverter cable and the coaxial cable

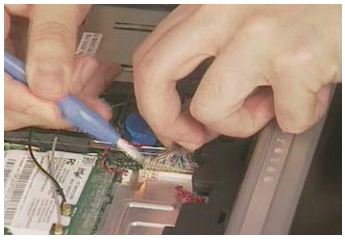


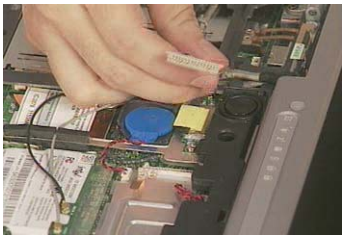
2.Press the two RF cables into the sponge in the way as shown.

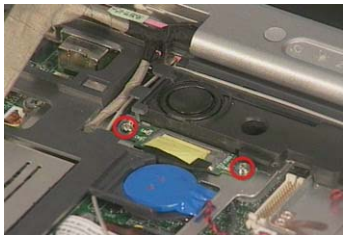
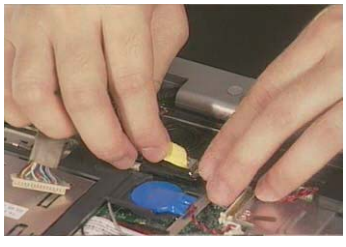
Removing the LCD Module

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61 (Remove the two screws and put the two antennas aside. Do not need to release the two RF cables from the upper casea and the sponge.)
5. Disconnect the inverter cable from the main board by using a plastic flat screwdriver and lift the cable up.



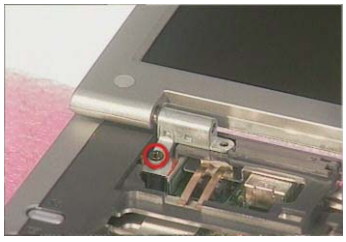


6. Remove the two screws as shown, disconnect the LCD coaxial cable from the main board and lift the cable up.

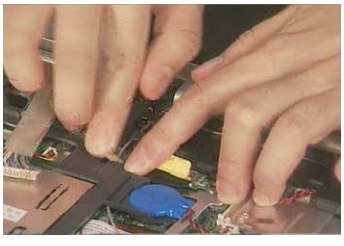
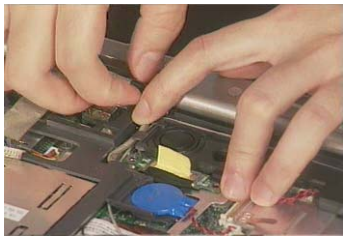
7. Remove the two screws as shown.

8. Remove the two screws.



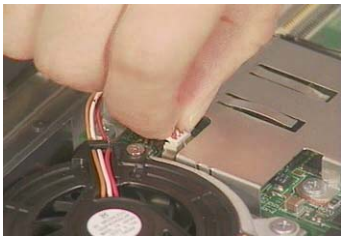
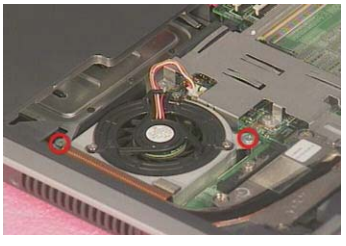
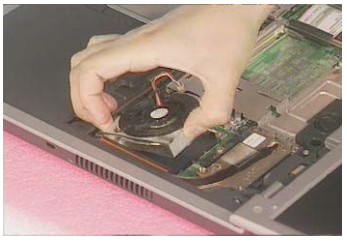
9. Lift up the LCD module carefully.

NOTE: When connecting the inverter cable and coaxial cable back to the unit, please note that the two cables should be routed as shown.

Removing the Fan Module

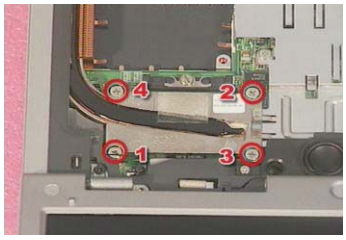
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. Disconnect the fan cable from the main board by using a plastic flat screwdriver, remove the two screws, and then detach the fan from the main board.

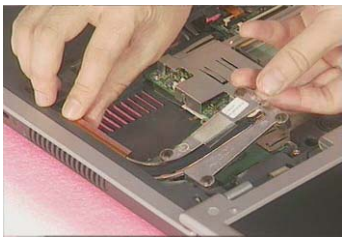




Removing the CPU Heat Sink

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60

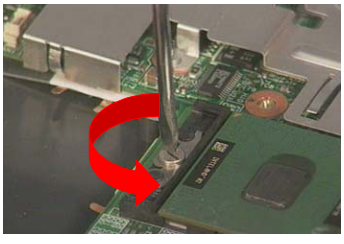
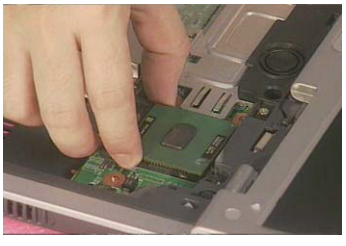
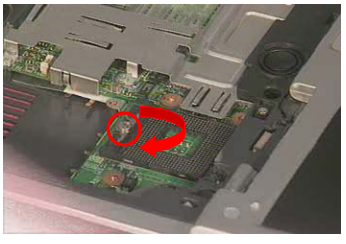
4. See “Removing the Fan Module” on page 65
5. Remove the four screws on the CPU heat sink in the numerical order, and then remove the CPU heat sink from the main board.



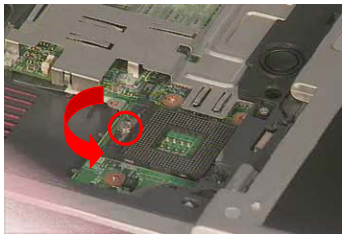
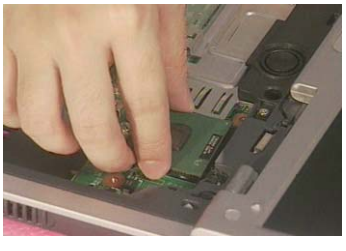
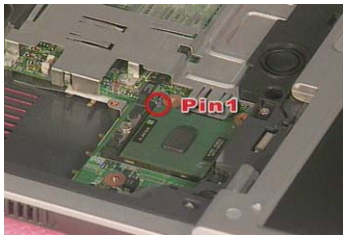


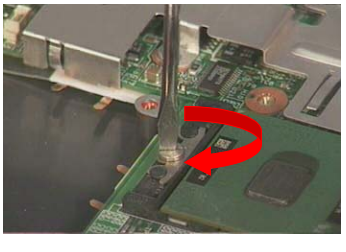
Removing the CPU

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Fan Module” on page 65
5. See “Removing the CPU Heat Sink” on page 65
6. Release the screw counterclockwise by using a flat screwdriver, remove the CPU. The use a flat screwdriver to lock the CPU socket well by turning clockwise.

NOTE: To install the CPU, first release the screw counterclockwise, put the CPU back and then secure the screw clockwise to lock the socket. When you reinstall the CPU back to its socket, please put it back with the triangle mark this side as shown here.

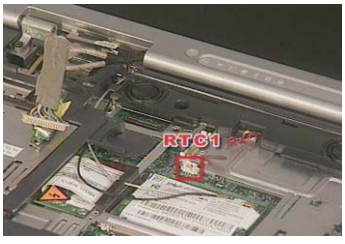






Removing the RTC Battery

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. Disconnect the RTC cable from the mainboard and remove the RTC battery.

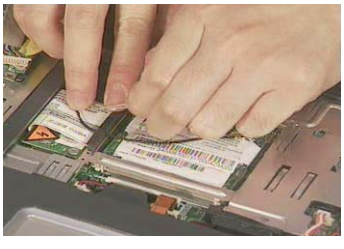
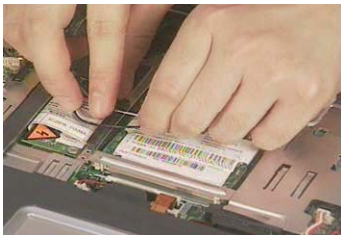
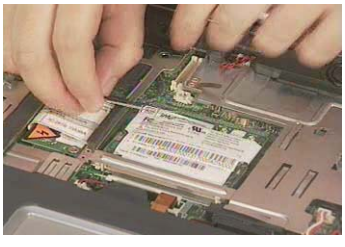
NOTE: Connect the RTC cable to RTC1 immediately and install the RTC battery back to the upper case to prevent the CMOS from resetting.



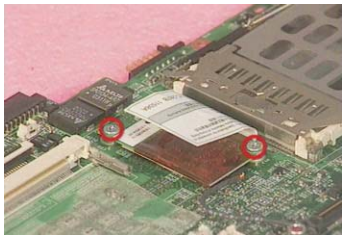
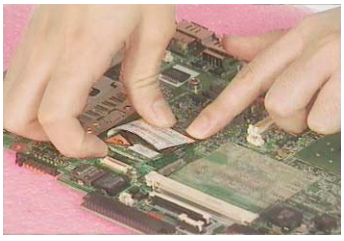
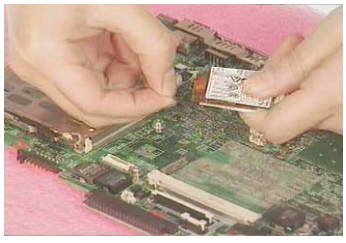
Removing the Modem Board

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. Disconnect the two RF cables from teh wireless LAN board.

5. Release the two RF cables from the sponge and put them aside.

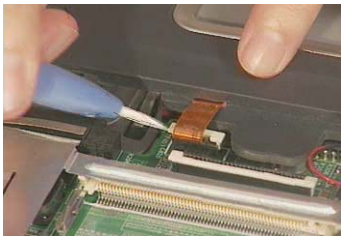
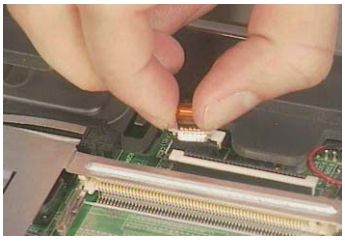




6. Remove the two screws on the modem board, disconnect the modem cable from the modem board and remove it from the main board.

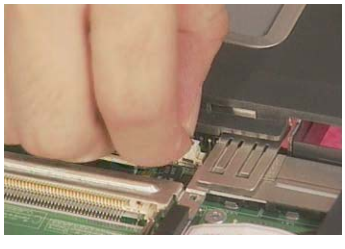
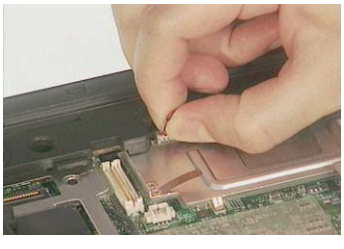
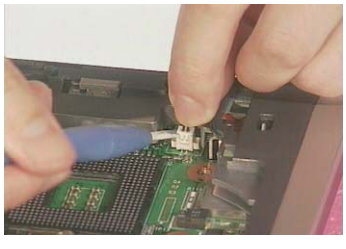




Separating the Upper Case from the Lower Case

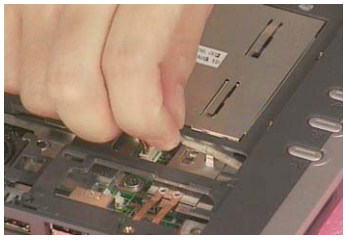
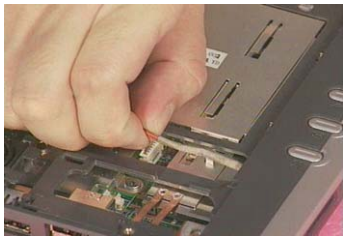
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. Disconnect the touch pad cable from the main board, the microphone cable, the speaker cable, the cover switch cable from the main board.

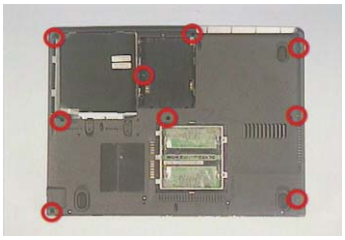
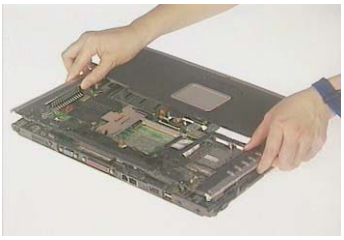
7. Disconnect the microphone cable, the speaker cable and the cover swtich cable from the main board.

8. Lift up and disconnect the launch cable from the main board.

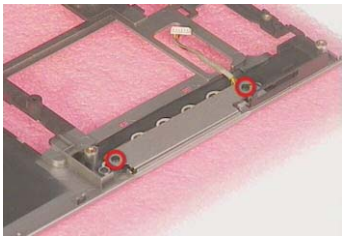
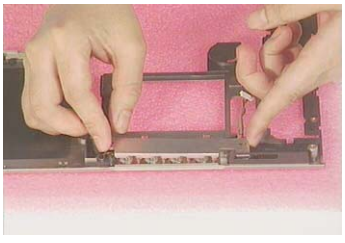



9. Release the nine screws from the bottom of the main unit and the other one as shown, and then remove the upper case from the main unit gently.

Removing the Launch PCB Bracket and Launch PCB

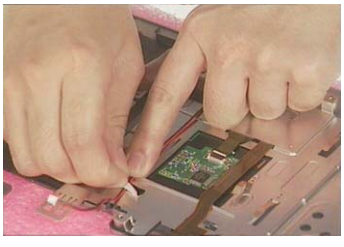
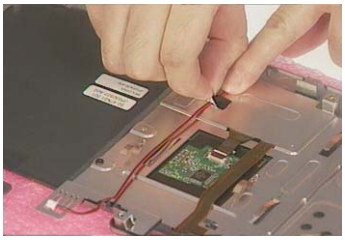
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. Remove the two screws and then detach the launch PCB bracket together from the launch PCB from the upper case.

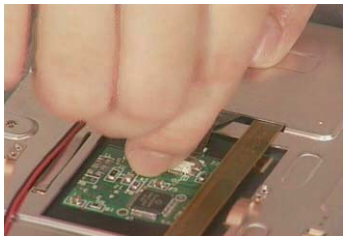
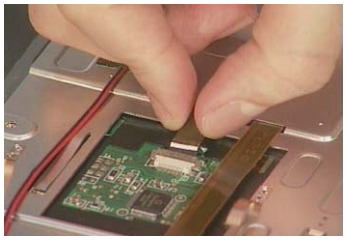
8. Detach the launch PCB bracket from the launch PCB.

Removing the Touch Pad Holder Module

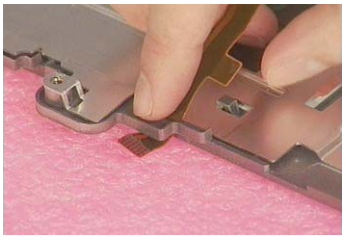
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. Remove the two tapes from the microphone cable, and put the microphone cable aside.

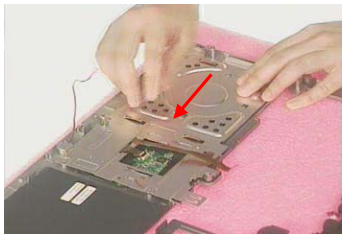
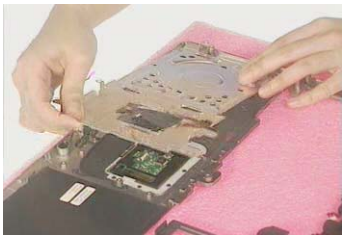



8. Disconnect the touch pad cable from the touch pad board.

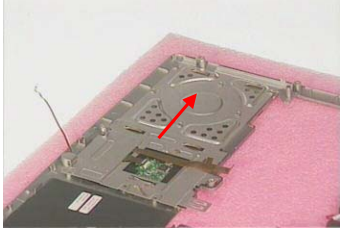



9. Release the touch pad cable from the upper case, remove the two screws, slide the touch pad holder module as shown and then detach the touch pad holder module from the upper case.



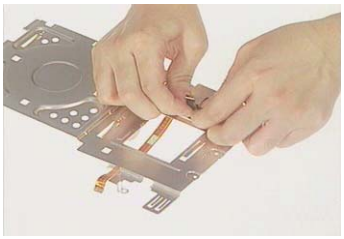
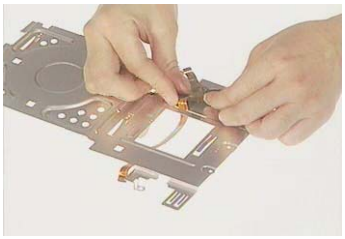
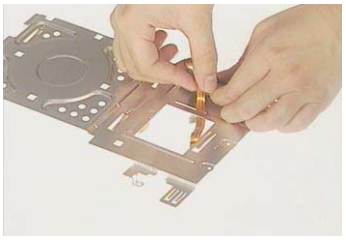



NOTE: When attaching the touch pad holder module back to the upper case, make sure the latches are installed well when you slide it to install.

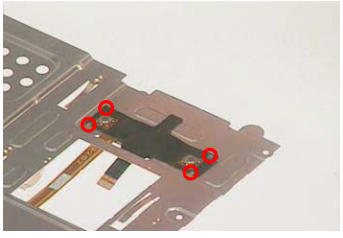


Removing the Touch Pad FPC

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. See “Removing the Touch Pad Holder Module” on page 69
8. Detach the touch pad FPC in the way as shown.

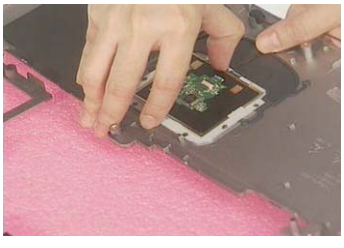




NOTE: When attaching the touch pad FPC back to the touch pad holder, please make sure the points on the touch pad holder are well inserted as shown.



Removing the Touch Pad Board

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. See “Removing the Touch Pad Holder Module” on page 69
8. Put a finger under the upper case to help release the touch pad board. Carefully slide the touch pad board in the direction as shown. Detach the touchpad board from the upper case very carefully.



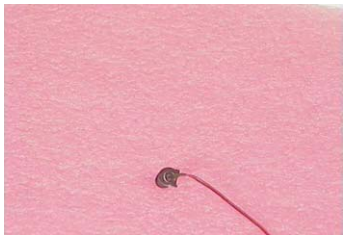
Removing the Microphone

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. See “Removing the Touch Pad Holder Module” on page 69
8. Detach the microphone from the upper case.

Removing the Microphone Rubber

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. See “Removing the Touch Pad Holder Module” on page 69
8. See “Removing the Microphone” on page 72
9. Detach the microphone from microphone rubber.

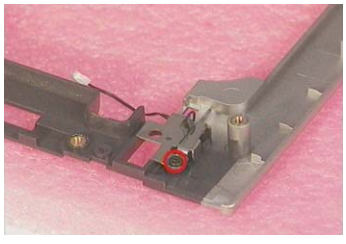
NOTE: When attaching the microphone to the microphone rubber, please pay attention to the way how it is attached.

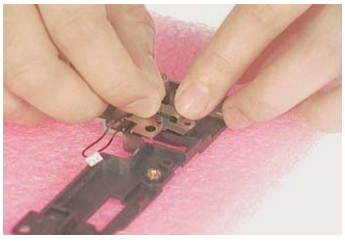


Removing the Cover Switch Bracket and Cover Swtich Cable

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. Remove the one screw and detach the cover swtich bracket together with the cover switch cable from the upper case. Be very careful when you try to remove it from the upper case.

.

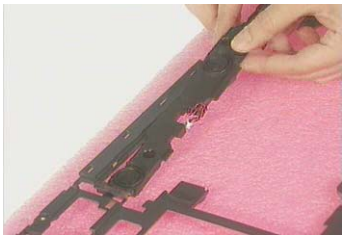




8. Detach the cover switch cable from the cover swtich bracket.

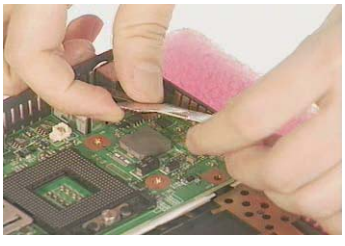
Removing the Speaker Assembly

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Separating the Upper Case from the Lower Case” on page 68
7. Remove the one screw and detach the speaker assembly from the upper case.



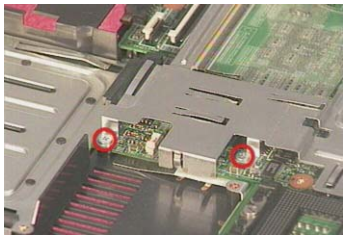
Removing the Choke Heatsink

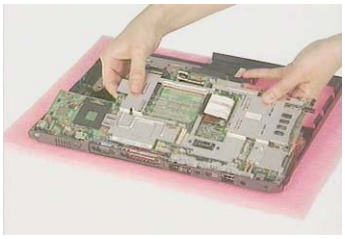
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the LCD Module” on page 64
5. See “Removing the Fan Module” on page 65
6. See “Removing the CPU Heat Sink” on page 65
7. See “Separating the Upper Case from the Lower Case” on page 68
8. Remove the one screw and detach the choke heatsink from the main board.



Removing the Main Board

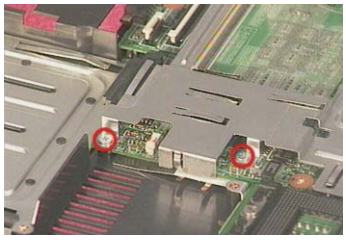
1. See “Removing the Battery” on page 55
2. See “Removing the Hard Disk Drive Module” on page 56
3. See “Removing the Optical Drive Module” on page 58
4. See “Removing the Middle Cover” on page 59
5. See “Removing the Keyboard” on page 60
6. See “Removing the Antennas” on page 61
7. See “Removing the LCD Module” on page 64
8. See “Removing the Fan Module” on page 65
9. See “Removing the CPU Heat Sink” on page 65
10. See “Separating the Upper Case from the Lower Case” on page 68
11. See “Removing the Choke Heatsink” on page 74
12. Remove the two screws on the main board as shown below and then detach the main board from the lower case with caution.



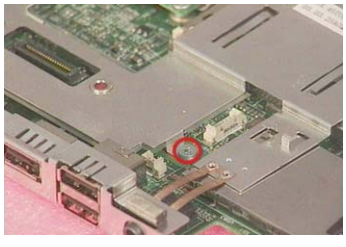


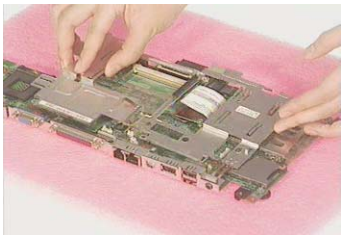
Removing the Main Board Chassis

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Antennas” on page 61
5. See “Removing the LCD Module” on page 64
6. See “Removing the Fan Module” on page 65
7. See “Removing the CPU Heat Sink” on page 65
8. See “Separating the Upper Case from the Lower Case” on page 68
9. See “Removing the Choke Heatsink” on page 74
10. Remove the two screws.



11. Remove the one screw as shown and detach the main board chassis from the lower case.

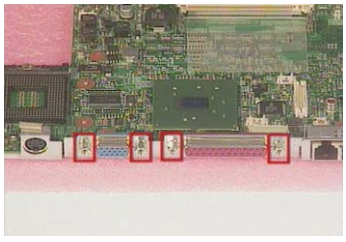
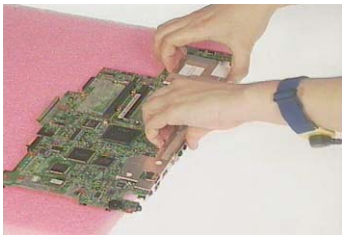
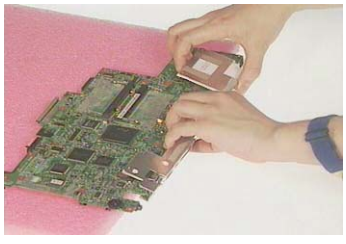
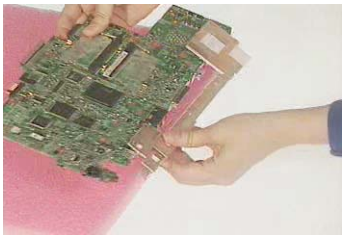




Removing I/O Port Bracket

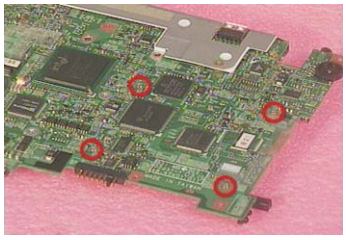
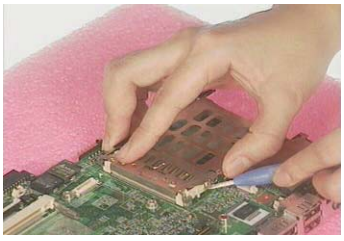
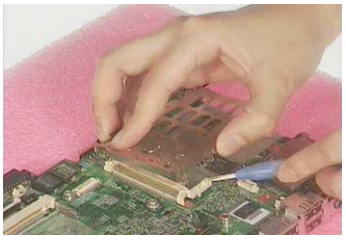
1. See “Removing the Battery” on page 55
2. See “Removing the Hard Disk Drive Module” on page 56
3. See “Removing the Optical Drive Module” on page 58
4. See “Removing the Middle Cover” on page 59
5. See “Removing the Keyboard” on page 60
6. See “Removing the Antennas” on page 61

7. See “Removing the LCD Module” on page 64
8. See “Removing the Fan Module” on page 65
9. See “Removing the CPU Heat Sink” on page 65
10. See “Separating the Upper Case from the Lower Case” on page 68
11. See “Removing the Choke Heatsink” on page 74
12. See “Removing the Main Board” on page 74
13. See “Removing the Main Board Chassis” on page 75
14. Remove the four hex screw as shown here and then detach the I/O port bracket from the main board.

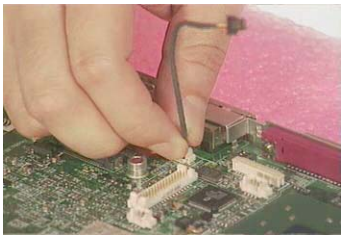
Removing the PCMCIA Socket

1. See “Removing the Battery” on page 55
2. See “Removing the Hard Disk Drive Module” on page 56
3. See “Removing the Optical Drive Module” on page 58
4. See “Removing the Middle Cover” on page 59
5. See “Removing the Keyboard” on page 60
6. See “Removing the Antennas” on page 61
7. See “Removing the LCD Module” on page 64
8. See “Removing the Fan Module” on page 65
9. See “Removing the CPU Heat Sink” on page 65
10. See “Separating the Upper Case from the Lower Case” on page 68
11. See “Removing the Choke Heatsink” on page 74
12. See “Removing the Main Board” on page 74
13. See “Removing the Main Board Chassis” on page 75
14. Release the four screws with a screwdriver and detach the PCMCIA socket from the main board.

Removing the Modem Board Cable

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Keyboard” on page 60
4. See “Removing the Modem Board” on page 67
5. Disconnect the modem cable with a plastic flat screwdriver and remove it from the main board.



Disassembling the 15” TFT LCD Module

Removing the LCD Bezel

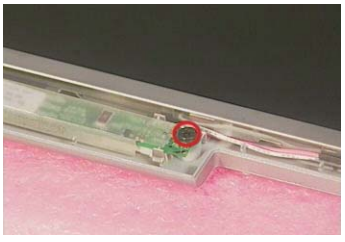
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Antennas” on page 61
4. See “Removing the LCD Module” on page 64
5. Remove the three mylars and two screw rubbers from the LCD module.

6. Remove the five screws from the LCD module.

7. Snap off the LCD bezel carefully and then remove it from the LCD module.

Removing the Inverter Board

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Antennas” on page 61
4. See “Removing the LCD Module” on page 64
5. See “Removing the LCD Bezel” on page 78
6. Remove the one screw, detach the inverter board from the LCD panel, disconnect the LCD power cable and the coaxial cable from the inverter board.



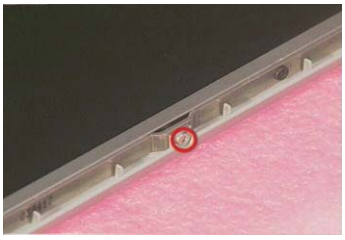
7. Remove the inverter board from the LCD panel.

Removing the LCD Latch

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Antennas” on page 61
4. See “Removing the LCD Module” on page 64
5. See “Removing the LCD Bezel” on page 78
6. Carefully detach the LCD latch together with the spring from the LCD bezel.

Removing the LCD

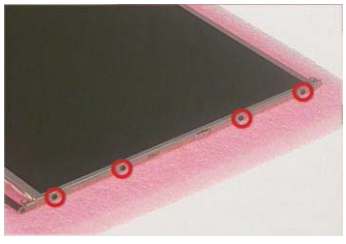
1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59
3. See “Removing the Antennas” on page 61
4. See “Removing the LCD Module” on page 64
5. See “Removing the LCD Bezel” on page 78
6. See “Removing the Inverter Board” on page 79
7. Remove the two screws as shown.



8. Remove the four screws on the hinges as shown.

9. Detach the LCD together with the LCD brackets from the LCD panel.

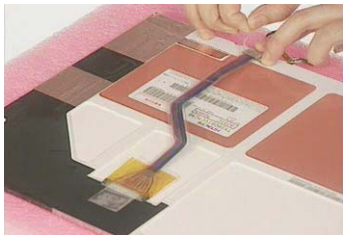
10. Remove the eight screws and then detach the LCD brackets from the LCD.



Removing the LCD Coaxial Cable

1. See “Removing the Battery” on page 55
2. See “Removing the Middle Cover” on page 59

3. See “Removing the Antennas” on page 61
4. See “Removing the Keyboard” on page 60
5. See “Removing the LCD Module” on page 64
6. See “Removing the LCD Bezel” on page 78
7. See “Removing the Inverter Board” on page 79
8. See “Removing the LCD” on page 79
9. Remove the tapes, disconnect and remove the coaxial cable from the LCD.



Troubleshooting

Use the following procedure as a guide for computer problems.

NOTE: The diagnostic tests are intended to test only our company's products. Other brand's products, prototype cards, or modified options can give false errors and invalid system responses.

1. Obtain the failing symptoms in as much detail as possible.
2. Verify the symptoms by attempting to re-create the failure by running the diagnostic te
3. st or by repeating the same operation.
4. Use the following table with the verified symptom to determine which page to go to.

Symptoms (Verified)	Go To
Power failure. (The power indicator does not go on or stay on.)	"Power System Check" on page 84.
POST does not complete. No beep or error codes are indicated.	"Power-On Self-Test (POST) Error Message" on page 89 "Undetermined Problems" on page 95
POST detects an error and displayed messages on screen.	"Error Message List" on page 89
Other symptoms (i.e. LCD display problems or others).	"Power-On Self-Test (POST) Error Message" on page 89
Symptoms cannot be re-created (intermittent problems).	Use the customer-reported symptoms and go to "Power-On Self-Test (POST) Error Message" on page 89 "Intermittent Problems" on page 95 "Undetermined Problems" on page 95

System Check Procedures

Power System Check

To verify the symptom of the problem, power on the computer using each of the following power sources:

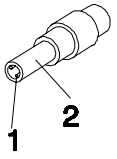
1. Remove the battery pack.
2. Connect the power adapter and check that power is supplied.
3. Disconnect the power adapter and install the charged battery pack; then check that power is supplied by the battery pack.

If you suspect a power problem, see the appropriate power supply check in the following list:

- “Check the Power Adapter” on page 84
- “Check the Battery Pack” on page 84

Check the Power Adapter

Unplug the power adapter cable from the computer and measure the output voltage at the plug of the power adapter cable. See the following figure



Pin 1: +19 to +20.5V
Pin 2: 0V, Ground

1. If the voltage is not correct, replace the power adapter.
2. If the voltage is within the range, do the following:
   - Replace the main board.
   - If the voltage is not correct, go to the next step.

NOTE: An audible noise from the power adapter does not always indicate a defect.

3. If the power-on indicator does not light up, check the power cord of the power adapter for correct continuity and installation.
4. If the operational charge does not work, see “Check the Battery Pack” on page 84.

Check the Battery Pack

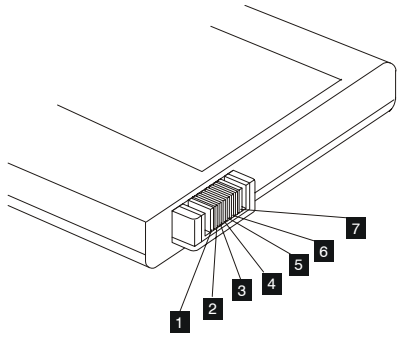
To check the battery pack, do the following:

From Software:

1. Check out the Power Management in control Panel
2. In Power Meter, confirm that if the parameters shown in the screen for Current Power Source and Total Battery Power Remaining are correct.
3. Repeat the steps 1 and 2, for both battery and adapter.
4. This helps you identify first the problem is on recharging or discharging.

From Hardware:

1. Power off the computer.
2. Remove the battery pack and measure the voltage between battery terminals 1(+) and 6(ground). See the following figure.



3. If the voltage is still less than 7.5 Vdc after recharging, replace the battery.

To check the battery charge operation, use a discharged battery pack or a battery pack that has less than 50% of the total power remaining when installed in the computer.

If the battery status indicator does not light up, remove the battery pack and let it return to room temperature. Re-install the battery pack.

If the charge indicator still does not light up, replace the battery pack. If the charge indicator still does not light up, replace the DC/DC charger board.

Touchpad Check

If the touchpad doesn't work, do the following actions one at a time to correct the problem. Do not replace a non-defective FRU:

1. Reconnect the touchpad cables.
2. Replace the touchpad.
3. Replace the main board.

After you use the touchpad, the pointer drifts on the screen for a short time. This self-acting pointer movement can occur when a slight, steady pressure is applied to the touchpad pointer. This symptom is not a hardware problem. No service actions are necessary if the pointer movement stops in a short period of time.

Phoenix BIOS Error Code Messages

The following are the list of messages that Phoenix BIOs can display. Most of them occur during POST. Some of them display information about a hardware device, e.g., and the amount of memory installed. Others may indicate a porblem with a device, such as the way it has been configured. The following lists the explanation of the messages and remedies for reported problems.

NOTE: If your system displays one of the messages marked below with an asterisk (*), write down the message and contact your dealer. If your system change after you make changes in the Setup menus, reset the computer, enter Setup and install Seup defaults or correct the error.

Error Codes	Error Messages
0200	Failure Fixed Disk Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
0210	Stuck key Stuck key on keyboard
0211	Keyboard Error Keyboard is not working
0212	*Keyboard Controller Failed Keyboard controller failed test. May require replacing keyboard controller.
0213	Keyboard Locked - Unlock Key Switch Unlock the system to proceed
0220	Monitor type does not match CMOS - Run Setup Monitor type not correctly identified on Setup
*0230	Shadow RAM failed at offset: nnnn Shadow RAM failed at offset nnnn of in the 64k block at which the error was detected.
*0231	System RAM failed at offset: nnnn System RAM failed at offset nnnn of in the 64k block at which the error was detected.
*0232	Extended RAM failed at offset: nnnn Extended memory not working or not configured properly at offset nnnn.
0250	System battery is dead - Replace and run setup The CMOs clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
0251	System CMOS checksum bd - Default configuration used System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS default installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
*0260	System Time Error The timer test failed. Requires repair of system board
*0270	Real Time Clock Error Real-Time Clock fail BIOS hardware test. May require board repair.
0271	Check date and time settings BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991 - 2099)
0280	Previous Boot Incomplete - Default Configuration used Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states,** improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the wait state configuration is correct. This error is cleared the next time the system is booted.

Error Codes	Error Messages
0281	Memory Size found by POST differed from CMOS Memory size found by POST differed from CMOS
02B0	Diskette Drive Error
02B1	Diskette Drive B Error
02B2	Incorrect Drive A type - run Setup Type of floppy drive A: Not correct
02B3	Incorrect Drive B Type - run Setup Type of floppy Drive A: not correctly identified in Setup.
02B3	Incorrect Drive B Type - run Setup Type of floppy drive B: not correctly identified in Setup.
02D0	System cache error - Cache disabled RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
02F0	CPU ID: CPU socket number for Multi-Purpose error.
*02F4	EISA CMOS not writeable Server BIOS 2 test error: Cannot write to EISA CMOS.
*02F5	DMA Test Failed Server BIOS 2 test error: Cannot write to extended DMA (Direct Memory Access) registers.
*02F6	Software NMI Failed Server BIOS 2 test error: Cannot generate software NMI (Non- Maskable Interrupt)
*02F7	Fail-Safe Timer NMI Failed Server BIOS 2 test error: Fail-Safe timer takes too long.
	Device Address Conflict Address conflict for specified *device*
	Allocation Error for: *device* Run ISA or EISA Configuration Utility to resolve resource conflict for the specified *device*.
	CD ROM Drive CD ROM Drive identified
	Entering Setup Starting Setup program
	*Failing Bits: *nnnn* The hex number *nnnn* is a map of the bits at the RAM address which failed the memory test. Each one (1) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset of the failure in System, Extended, os Shadow memory.
	Fixed Disk *n* Fixed disk *n (0-3)* identified.
	Invalid System Configuration Data Problem with NVRAM (CMOS) data.
	I/O device IRQ Conflict I/O device IRQ conflict error
	PS/2 Mouse Boots Summary Screen PS/2 Mouse installed
	nnnn KB Extended RAM Passed Where *nnnn* is the amount of RAM in kilobytes successfully tested.

Error Codes	Error Messages
	nnnn Cache SRAM Passed *Where nnnn* is the amount of shadow RAM in kilobytes successfully tested.
	nnnn KB Shadow RAM Passed Where nnnn is the amount of shadow RAM in shadow in kilobytes successfully tested.
	nnnn KB system RAM Passed Where nnnn is the amount of shadow RAM in kilobytes successfully tested.
	One or more I20 Block Storage Devices were excluded from the Setup Boot Menu. There was not enough room in the IPL table to display all installed I_2O bloc storage devices.
	Operating System Not Found Operating system cannot be located on either drive A.: or drive C: Enter Setup and see if fixed disk and drive A are properly identified.
	*Parity check 1 *nnnn* Parity error found in the system bus. BIOS attempts to locate the address and its display. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
	Parity check 2 *nnnn* Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot located the address, it displays????.
	Press <F1> to resume, <F2> to Setup, for previous Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to Enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.
	Press <F2> to enter Setup Optional message displayed during POST. Can be turned off in Setup.
	PS/2 Mouse PS/2 mouse identified
	Run the I2O Configuration Utility One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility. (e.g. the SAC Utility)
	System BIOS Shadowed System BIOS copied to shadow RAM
	UMB upper limit segment address: *nnnn* Displays the address nnnn of the upper limit of U**pper Memory Blocks,** Indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
	Video BIOS Shadowed Video BIOS successfully copied to shadow RAM

Power-On Self-Test (POST) Error Message

The POST error message index lists the error message and their possible causes. The most likely cause is listed first.

NOTE: Perform the FRU replacement or actions in the sequence shown in FRU/Action column, if the FRU replacement does not solve the problem, put the original part back in the computer. Do not replace a non-defective FRU.

This index can also help you determine the next possible FRU to be replaced when servicing a computer.

If the symptom is not listed, see “Undetermined Problems” on page 95.

The following lists the error messages that the BIOS displays on the screen and the error symptoms classified by function.

NOTE: Most of the error messages occur during POST. Some of them display information about a hardware device, e.g., the amount of memory installed. Others may indicate a problem with a device, such as the way it has been configured.

NOTE: If the system fails after you make changes in the BIOS Setup Utility menus, reset the computer, enter Setup and install Setup defaults or correct the error.

Index of Error Messages

Error Message List

Error Messages	FRU/Action in Sequence
Failure Fixed Disk	Reconnect hard disk drive connector. “Load Default Settings” in BIOS Setup Utility. Hard disk drive Main Board
Keyboard locked - Unlock key switch	Unlock external keyboard
Monitor type does not match CMOS - Run Setup	Run “Load Default Settings” in BIOS Setup Utility.
Shadow RAM Failed at offset: nnnn	BIOS ROM Main Board
System RAM Failed at offset: nnnn	DIMM Main Board
Extended RAM Failed at offset: nnnn	DIMM Main Board
System battery is dead - Replace and run Setup	Replace RTC battery and Run BIOS Setup Utility to reconfigure system time, then reboot system.
System CMOS checksum bad - Default configuration used	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system.
System timer error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. Main Board
Real time clock error	RTC battery Run BIOS Setup Utility to reconfigure system time, then reboot system. Main Board
Previous boot incomplete - Default configuration used	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board

Error Message List

Error Messages	FRU/Action in Sequence
Memory size found by POST differed from CMOS	Run “Load Default Settings” in BIOS Setup Utility. DIMM Main Board
Diskette drive A error	Check the drive is defined with the proper diskette type in BIOS Setup Utility
Incorrect Drive A type - run SETUP	Check the drive is defined with the proper diskette type in BIOS Setup Utility
System cache error - Cache disabled	Main Board
CPU ID:	Main Board
DMA Test Failed	DIMM Main Board
Software NMI Failed	DIMM Main Board
Fail-Safe Timer NMI Failed	DIMM Main Board
Device Address Conflict	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Allocation Error for device	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Failing Bits: nnnn	DIMM BIOS ROM Main Board
Fixed Disk n	None
Invalid System Configuration Data	BIOS ROM Main Board
I/O device IRQ conflict	Run “Load Default Settings” in BIOS Setup Utility. RTC battery Main Board
Operating system not found	Enter Setup and see if fixed disk and drive A: are properly identified. Diskette drive Hard disk drive Main Board

Index of Symptom-to-FRU Error Message

Error Message List

No beep Error Messages	FRU/Action in Sequence
No beep, power-on indicator turns off and LCD is blank.	Power source (battery pack and power adapter). See “Power System Check” on page 84. Ensure every connector is connected tightly and correctly. Reconnect the DIMM. LED board. Main Board.
No beep, power-on indicator turns on and LCD is blank.	Power source (battery pack and power adapter). See “Power System Check” on page 84. Reconnect the LCD connector Hard disk drive LCD inverter ID LCD cable LCD Inverter LCD Main Board
No beep, power-on indicator turns on and LCD is blank. But you can see POST on an external CRT.	Reconnect the LCD connectors. LCD inverter ID LCD cable LCD inverter LCD Main Board
No beep, power-on indicator turns on and a blinking cursor shown on LCD during POST.	Ensure every connector is connected tightly and correctly. Main Board
No beep during POST but system runs correctly.	Speaker Main Board

LCD-Related Symptoms

Symptom / Error	Action in Sequence
LCD backlight doesn't work LCD is too dark LCD brightness cannot be adjusted LCD contrast cannot be adjusted	Enter BIOS Utility to execute “Load Setup Default Settings”, then reboot system. Reconnect the LCD connectors. Keyboard (if contrast and brightness function key doesn't work). LCD inverter ID LCD cable LCD inverter LCD Main Board
Unreadable LCD screen Missing pels in characters Abnormal screen Wrong color displayed	Reconnect the LCD connector LCD inverter ID LCD cable LCD inverter LCD Main Board
LCD has extra horizontal or vertical lines displayed.	LCD inverter ID LCD inverter LCD cable LCD Main Board

Indicator-Related Symptoms

Symptom / Error	Action in Sequence
Indicator incorrectly remains off or on, but system runs correctly	Reconnect the inverter board Inverter board Main Board

Power-Related Symptoms

Symptom / Error	Action in Sequence
Power shuts down during operation	Power source (battery pack and power adapter). See “Power System Check” on page 84. Battery pack Power adapter Hard drive & battery connection board Main Board
The system doesn’t power-on.	Power source (battery pack and power adapter). See “Power System Check” on page 84. Battery pack Power adapter Hard drive & battery connection board Main Board
The system doesn’t power-off.	Power source (battery pack and power adapter). See “Power System Check” on page 84. Hold and press the power switch for more than 4 seconds. Main Board
Battery can’t be charged	See “Check the Battery Pack” on page 84. Battery pack Main Board

PCMCIA/Smart Card-Related Symptoms

Symptom / Error	Action in Sequence
System cannot detect the PC Card (PCMCIA)	PCMCIA/Smart Card slot assembly Main Board
System cannot detect the Smart Card	Smart Card PCMCIA/Smart Card slot assembly Main Board
PCMCIA/Smart Card slot pin is damaged.	PCMCIA/Smart Card slot assembly

Memory-Related Symptoms

Symptom / Error	Action in Sequence
Memory count (size) appears different from actual size.	Enter BIOS Setup Utility to execute “Load Default Settings, then reboot system. DIMM Main Board

Speaker-Related Symptoms

Symptom / Error	Action in Sequence
In Windows, multimedia programs, no sound comes from the computer.	Audio driver Speaker Main Board
Internal speakers make noise or emit no sound.	Speaker Main Board

Power Management-Related Symptoms

Symptom / Error	Action in Sequence
The system will not enter hibernation	Keyboard (if control is from the keyboard) Hard disk drive Main Board
The system doesn't enter hibernation mode and four short beeps every minute.	Press Fn+F2 and see if the computer enters hibernation mode. Touchpad Keyboard Hard disk connection board Hard disk drive Main Board
The system doesn’t enter standby mode after closing the LCD	LCD cover switch Main Board
The system doesn't resume from hibernation mode.	Hard disk connection board Hard disk drive Main Board
The system doesn't resume from standby mode after opening the LCD.	LCD cover switch Main Board
Battery fuel gauge in Windows doesn’t go higher than 90%.	Remove battery pack and let it cool for 2 hours. Refresh battery (continue use battery until power off, then charge battery). Battery pack Main Board

Peripheral-Related Symptoms

Symptom / Error	Action in Sequence
System configuration does not match the installed devices.	Enter BIOS Setup Utility to execute “Load Default Settings”, then reboot system. Reconnect hard disk/CD-ROM/diskette drives.
External display does not work correctly.	Press Fn+F3, LCD/CRT/Both display switching Main Board
USB does not work correctly	Main Board
Print problems.	Ensure the “Parallel Port” in the “Onboard Devices Configuration” of BIOS Setup Utility is set to Enabled. Onboard Devices Configuration Run printer self-test. Printer driver Printer cable Printer Main Board
Serial or parallel port device problems.	Ensure the “Serial Port” in the Devices Configuration” of BIOS Setup Utility is set to Enabled. Device driver Device cable Device Main Board

Keyboard/Touchpad-Related Symptoms

Symptom / Error	Action in Sequence
Keyboard (one or more keys) does not work.	Reconnect the keyboard cable. Keyboard Main Board
Touchpad does not work.	Reconnect touchpad cable. Touchpad board Main Board

Modem-Related Symptoms

Symptom / Error	Action in Sequence
Internal modem does not work correctly.	modem board Main Board

NOTE: If you cannot find a symptom or an error in this list and the problem remains, see “Undetermined Problems” on page 95.

LAN-Related Symptoms

Symptom / Error	Action in Sequence
Internal LAN does not work correctly.	LAN board Main Board

Wireless LAN-Related Symptoms

Symptom / Error	Action in Sequence
Internal wireless LAN does not work correctly.	right or left antenna kits wireless LAN board Main Board

Intermittent Problems

Intermittent system hang problems can be caused by a variety of reasons that have nothing to do with a hardware defect, such as: cosmic radiation, electrostatic discharge, or software errors. FRU replacement should be considered only when a recurring problem exists.

When analyzing an intermittent problem, do the following:

1. Run the advanced diagnostic test for the main board in loop mode at least 10 times.
2. If no error is detected, do not replace any FRU.
3. If any error is detected, replace the FRU. Rerun the test to verify that there are no more errors.

Undetermined Problems

The diagnostic problems does not identify which adapter or device failed, which installed devices are incorrect, whether a short circuit is suspected, or whether the system is inoperative.

Follow these procedures to isolate the failing FRU (do not isolate non-defective FRU).

NOTE: Verify that all attached devices are supported by the computer.

NOTE: Verify that the power supply being used at the time of the failure is operating correctly. (See “Power System Check” on page 84):

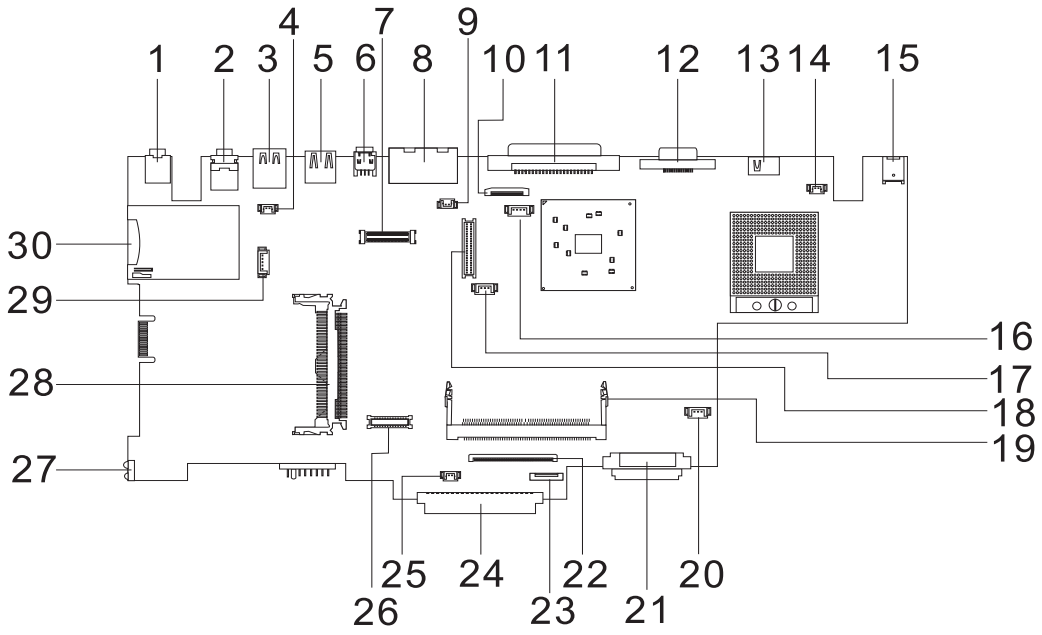
1. Power-off the computer.
2. Visually check them for damage. If any problems are found, replace the FRU.
3. Remove or disconnect all of the following devices:
    - ❑ Other companies’ devices
    - ❑ Printer, mouse, and other external devices
    - ❑ Battery pack
    - ❑ Hard disk drive
    - ❑ DIMM
    - ❑ CD-ROM/Floppy diskette drive Module
    - ❑ PC Cards
4. Power-on the computer.
5. Determine if the problem has changed.
6. If the problem does not recur, reconnect the removed devices one at a time until you find the failing FRU.
7. If the problem remains, replace the following FRU one at a time. Do not replace a non-defective FRU:
    - ❑ Main Board
    - ❑ LCD assembly

Index of PQA Diagnostic Error Code, Message

Error Code	Message	Action in Sequence
16XXX	Backup battery error	Backup battery
01XXX	CPU or main board error	Reload BIOS default setting. Main Board
02XXX	Memory error	DIMM Main Board
03XXX	Keyboard error	Reset Keyboard Keyboard Main Board
04XXX	Video error	Main Board
05XXX	Parallel Port error	Main Board
06XXX	Serial port or main board error	Main Board
07XXX	Diskette drive error	Diskette drive Main Board
08XXX	Hard disk error	Reload BIOS default setting Hard disk Main Board
09XXX	CD-ROM error	Reset CD-ROM cable CD-ROM drive Main Board
10XXX	Co-processor error	Main Board
11XXX	Pointing device error	Reset Keyboard Keyboard Main Board
12XXX	Cache test error	Main Board

Jumper and Connector Locations

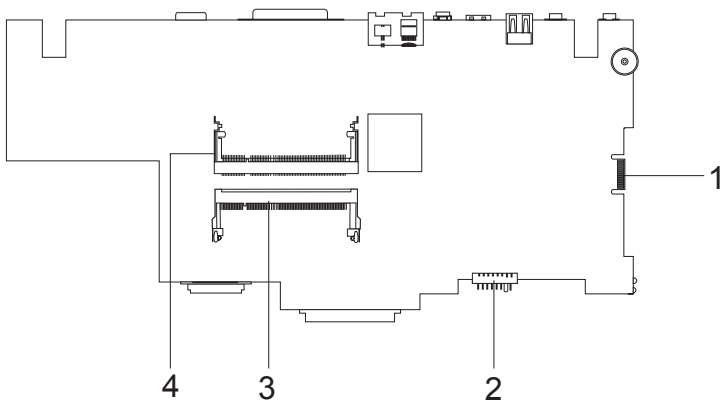
Top View



PCB 02231-SB

1	LIN/MIC1	Line-in/Microphone-in connector	16	SPK1	Speaker cable connector
2	LOUT1	Line-out connector	17	RTC1	RTC battery connector
3	USB2	USB port	18	INV1	Inverter cable connector
4	PWR1	Power button cable connector	19	MINI1	Mini-PCI connector
5	USB1	USB port	20	FAN1	Fan connector
6	1394_1	1394 connector	21	IDE1	Optical drive connector
7	LCD1	LCD coaxial cable connector	22	KB1	Keyboard cable connector
8	RJ45	RJ45/RJ11 connectors	23	TPAD1	Keypad cable connector
9	Ring1	Modem ring cable connector	24	HDD1	Hard diskette drive connector
10	CN1	Audio DJ connector	25	MIC1	Microphone connector
11	PRT1	Parallel port	26	MDC1	Modem connector
12	CRT1	External monitor port	27	U50	FIR indicator
13	TV1	TV-out connector	28	CBUS1	PCMCIA cardbus connector
14	CVR1	Lid cover switch cable connector	29	Lun1	Launch key cable connector
15	DCIN1	AC adapter connector	30	SD1	SD/MS/MMC card reader socket

Bottom View



1		Golden finger for debug	3	DM2	Memory socket 2
2	BAT1	Battery connector	4	DM1	Memory socket 1

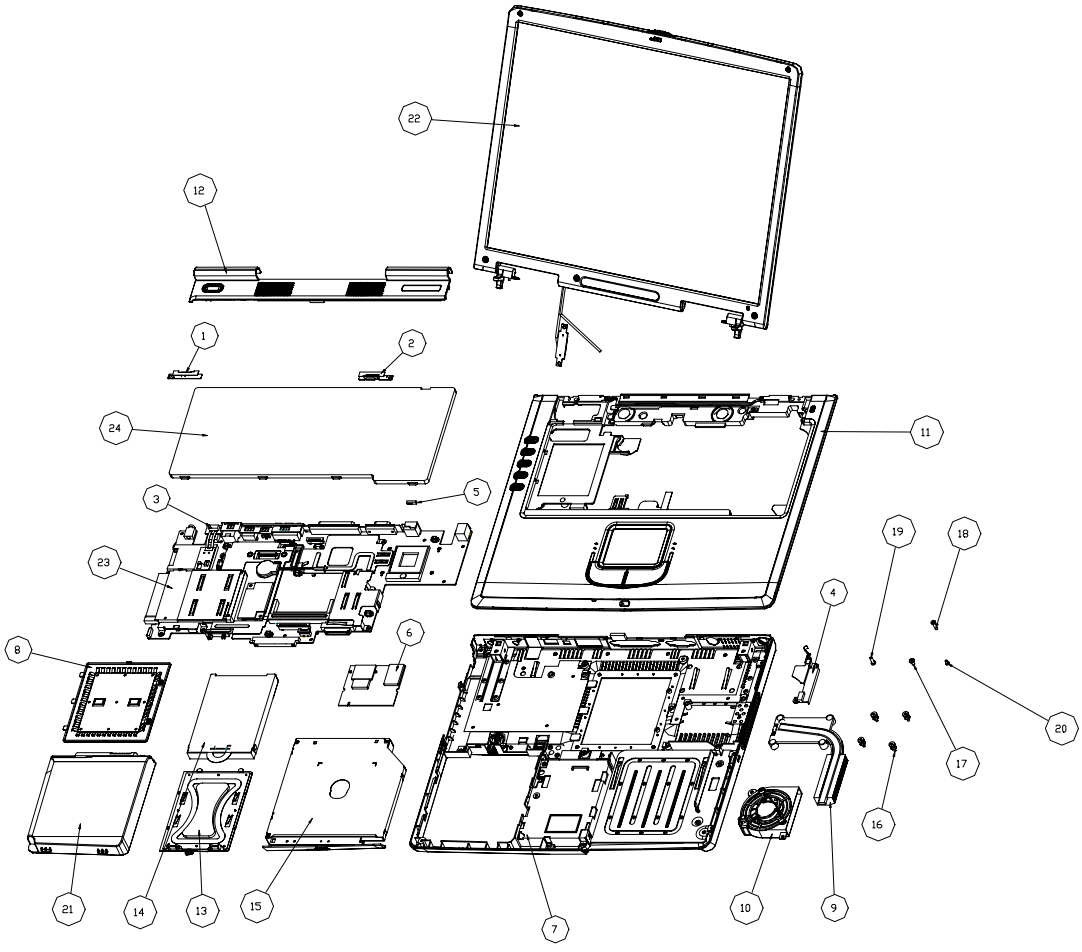
FRU (Field Replaceable Unit) List

This chapter gives you the FRU (Field Replaceable Unit) listing in global configurations of OpenBook 1556. Refer to this chapter whenever ordering for parts to repair or for RMA (Return Merchandise Authorization).

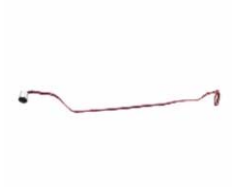
Please note that WHEN ORDERING FRU PARTS, you should check the most up-to-date information available on your regional web or channel. For whatever reasons a part number change is made, it will not be noted on the printed Service Guide. For AUTHORIZED SERVICE PROVIDERS, your office may have a DIFFERENT part number code from those given in the FRU list of this printed Service Guide. You MUST use the local FRU list provided by your regional office to order FRU parts for repair and service of customer machines.

NOTE: To scrap or to return the defective parts, you should follow the local government ordinance or regulations on how to dispose it properly, or follow the rules set by your regional office on how to return it.

OpenBook 1556 Exploded Diagram



Picture	No.	Partname	Description
LCD			
	NS	LCD 15"XGA HITACHI TX38D81VC1CAB REV.B	LCD 15"XGA TX38D81VC1CAB REV.B
	NS	LCD 15"XGA CHIMEI N150X3-L05 C2	LCD 15" XGA TFT N150X3-L05 C2
	NS	LCD 14.1"XGA CHIMEI N141X6-L01/08	LCD 14.1"XGA TFT N141X6-L01/08
Cables/Antenna			
	NS	LCD COAXIAL CABLE 15.1" LCD	CABLE LCD COAXIAL 15.1" LCD
	NS	LCD COAXIAL CABLE 14.1" LCD	C.A. COAXIAL CABLE FOR CMO 14"
	NS	MODEM CABLE	CABLE RJ11
	2	WIRELESS ANTENNA RIGHT	ANTENNA RIGHT B2M
	1	WIRELESS ANTENNA LEFT BLACK	ANTENNA LEFT B2M

Picture	No.	Partname	Description
Microphone			
	NS	MICROPHONE	MICOPHONE TS-60A-W28-150 B2M
Case/Cover/Bracket Assembly			
	NS	LOWER CAES GL	ASSY LOWER CASE B2M
	7	LOWER CAES AL	ASSY LOWER CASE B2I
	NS	DIMM COVER W/SCREW GL	ASSY DIMM DOOR(CU) B2I
	8	DIMM COVER W/SCREW AL	ASSY DIMM COVER B2I
	NS	HDD COVER W/SCREW GL	ASSEMBLY HDD COVER B2M
	13	HDD COVER W/SCREW AL	ASSY HDD COVER B2I
	NS	LCD PANEL 14.1"/15" GL	ASSEMBLY LCD BEZEL 15.1" B2M
	NS	LCD PANEL 14.1"/15" AL/ AV	ASSY LCD 14"/15" PANEL(1)

Picture	No.	Partname	Description
	NS	LCD BEZEL 15" GL	ASSEMBLY LCD BEZEL 15.1” B2M
	NS	LCD BEZEL 15" AL	ASSY LCD 15" BEZEL
	NS	LCD BEZEL 14.1" AV	ASSY LCD BEZEL14 (PAINTING)
	NS	HDD BRACKET	ASSEMBLY HDD BRACKET B2M
	NS	HINGE PACK 15" LEFT/ RIGHT	HINGE LEFT 15.1" LCD B2M
	NS	HINGE PACK 14.1" LEFT/ RIGHT	HINGE LEFT 14.1" LCD B2M
	NS	LAUNCH BOARD BRACKET	BRACKET LAUNCH PCB B2I
	NS	UPPER CASE W/COVER SWITCH CABLE & TOUCHPAD MODULE & MICROPHONE GL	ASSEMBLY UPPER CASE B2M

Picture	No.	Partname	Description
	11	UPPER CASE W/COVER SWITCH CABLE & LAUNCH BOARD & TOUCHPAD MODULE & MICROPHONE AL	ASSY UPPER CASE(1) B2I
	NS	MIDDLE COVER W/ POWER BOARD GL	ASSEMBLY MIDDLE COVER B2M
	12	MIDDLE COVER W/ POWER BOARD AL	ASSY MIDDLE COVER B2I (ID-2)
Boards			
	NS	INVERTER BOARD	INVERTER 15" TWS-058-029
	NS	LAUNCH BOARD	CABLE LAUNCH PCB/W WIRE
	NS	LAUNCH BOARD ASSEMBLY W/COVER & SCREW	ASSY LAUNCH KEY CVR GENERI B2M
	NS	MODEM BOARD	MODEM MDC AMBIT/T60M283.10(01)
Battery			
	NS	RTC BATTERY	BATTERY RTC FOR PORON

Picture	No.	Partname	Description
	21	BATTERY MODULE LI 2.2AH 8CELL SANYO	BTY PACK LI2.2AH8C NUCON SANYO
Adapter/Power cord			
	NS	ADAPTER 70W 19V	ADPT 70W 19V CCC PA-1700-02AB
		POWER CORD	CORD H05VV-F 3G K15081H5183BPL
Speaker			
	NS	SPEAKER	SPEAKER 13.5MM*6MM B2M
	NS	SPEAKER MODULE LEFT & RIGHT	SPEAKER ASS'Y B2I
Heatsink			
	9	CPU HEATSINK W/O FAN	ASSEMBLY CPU HEAT SINK B2M

Picture	No.	Partname	Description
	4	CHOKE HEATSINK	CHOKE HEAT SINK B2M
Fan			
	10	FAN MODULE	ASSEMBLY FAN B2M
Main board			
	23	MAINBOARD B2I W/ MODEM & MODEM CABLE & RTC BATTERY	D2I MB-2 W/O CPU(DIP)
Miscellaneous			
	NS	LCD SCREW MYLAR LOWER AL	MYLAR SCREW COVER B2I
	NS	MICROPHONE RUBBER	RUBBER MIC 610
	NS	LCD SCREW RUBBER UPPER AL	RUB SCREW COVER MAXDATA SILVER

Picture	No.	Partname	Description
	NS	LCD SCREW RUBBER UPPER GL	RUBBER B SCREW COVER B2M
	NS	LCD SCREW RUBBER GL	RUB SCREW COVER B2M BLACK
Screws			
	NS	SCREW	SCR. HEX NUT W/WASHER&NYLOK #4
	NS	SCREW	SCREW MACH FLAT M3*2.8
	NS	SCREW	SCRW MACH FLT M2*L3BK-NI NYLOK
	17	SCREW	WCH MSN+CZ SCREW M2.5X5
	NS	SCREW	SCRW M2.5*5 WAFER B-ZN

Picture	No.	Partname	Description
	19	SCREW	SRW M2.5*8L B/ZN NYLOK 700
	20	SCREW	SCRW M2*4 WAFER NI
	16	SCREW	SCRW MAC PAN M2*L9.3COL-ZN SPR
	18	SCREW	SCRW MACH PAN NYLOK M2.5*10 NI

Test Compatible Components

This computer's compatibility is tested and verified by the internal testing department. All of its system functions is tested under Windows XP.

Refer to the following lists for components, adapter cards, and peripherals which have passed these tests. Regarding configuration, combination and test procedures, please refer to the OpenBook 1556 Compatibility Test Report released by the Mobile System Testing Department.

Microsoft Windows XP Environment Test

Item	Specifications
CPU	Pentium M 1.4GHz Pentium M 1.7GHz
Mainboard	D2I MB (10/100 LAN)
Assembly LCD Unit	ASS LCD Unit (CMO) ASS LCD Unit (HT 15") (Sumida)
LCD	LCD 14" XGA CMO LCD 15" XGA HTC
Inverter	Inverter 15.0 / 14.1" Ambit T6I194.06 Rev.02
HDD	HDD 40GB-HTC HDD 60GB-HTC
Optical	DVD-ROM 8X (LiteOn) DVD/RW Combo(QSI)
Keyboard	KB SUNREX K020830M2US US
Adapter	AC Adapter(70W, 3-pin) -- LiteOn
Battery	Sanyo 8-cell SMP (Samsung cell) Li + 8-cell
Memory	256MB-Micron 256MB-Infeneon
Modem	Modem MDC Module-Ambit
Wireless Lan	802.11B MiniPCI Module-Intel
Antenna	802.11 Antenna L (Neweb) 802.11 Antenna R (Neweb)
Power Cord	125V UL 3P K01081B1183WP (King Cord)
Basic PC Card List	
LAN Card	3Com EtherLink III 3C589D IBM EtherJet CardBus Adapter 10/100 (PEN-936) Intel EtherExpress Pro/100 Mobile Adapter MBLA3200 Xircom CardBus Ethernet 10/100 32bit CBE-10/100BTX
Modem Card	3Com Megahertz 56K Modem PC Card Xircom CreditCard Modem 56 IBM 56K Double Jack Modem 02K4197
Combo Card	IBM 10/100 EtherJet CardBus Real Port w/ 56K modem 3Com Megahertz 10/100 LAN + 56K Modem PC Card KB-04-002 Xircom RealPort CardBus Ethernet 10/100 + Modem 56 RBEM5G-100
ATA Card	IBM MicroDrive 340MB IBM MicroDrive 1G Iomega Click! 40MB Sony Memory Stick 64 MB Sandisk Flash Card 20MB Apacer SD Flash Card 128MB Transcend SD Card 32MB Apacer USB 1.1 HandyDrive 512MB Apacer USB 2.0 HandyDrive 256 MB Sony Memory Key 128 MB
USB 2.0 Card	Apricom EZ-USB 2.0 CardBus PC Card

Item	Specifications
1394 Card	Buffalo 1394 Interface CardBus IFC-ILCB/DV I-O Data 1394 Interface CardBus CB1394/DVC Pixela 1394 CardBus PC Card PIX-PCMC/FW1
SCSI Card	Adaptec 1480A or B SCSI CB 1680880A/B NewMedia Bus Toaster SCSI II
Wireless LAN Card	IBM Wireless LAN CardBus adapter Intel Pro/Wireless LAN PC Card 2011B Proxim Skyline 802.11a Cardbus Card
BlueTooth Card	IBM Community Bluetooth PC Card Toshiba Bluetooth PC Card PABTC001
ISDN	US Robotics Megahertz 128K ISDN Card 405R17T7117M IBM OBI International ISDN PC Card IBM ISDN Card D5K3320
Token Ring Card	IBM Token ring 16/4 Adapter II IBM Turbo 16/4 Token Ring 85H3677 Olicom Token Ring GoCard OC-3221
I/O Peripheral	
I/O - External CRT	Acer 211c 21” ViewSonic PF790, 19” Acer FP751 17” TFT LCD IBM Color TFT LCD 14” 9514-B03 Compaq Color Monitor V70 Net Color Monitor 20” Mozo 17” TFT LCD (DVI)
I/O - Projector	NEC MultiSync MT-1040
I/O - PS2/Serial (Keyboard/Mouse)	IBM 101 Key Keyboard KB-454 IBM 109 Key Keyboard 5576-B06 Acer PS2 Ksyboard 6311-C4C Acer KB 101-A GQ87EEKB-101A IBM Numeric KeyPad III 79F6408 Acer Acer Mouse M-S31 IBM PS2 Mini Mouse 07G0033 IBM PS2 Mouse 12J3615 Logitech Serial Mouse M-M35 Microsoft InteliMouse PS2 interface Microsoft InteliMouse Optical PS2 interface X05-48976
I/O - Parallel (Printer/Scanner)	Canon BJC-600J Epson Stylus Color 740 Parallel Interface HP DeskJet 890C HP DeskJet 880C Parallel interface HP LaserJet 6MP HP LaserJEt 2200 AcerScan Prisa 620P 6696-0PC
I/O - IR Printer	HP LaserJet 6MP use IR HP LaserJet 2200 use IR

Item	Specifications
I/O - USB Keyboard/Mouse	Chicony USB Keyboard KU-8933 IBM USB Numeric Keyboard Microsft Natural Keyboard Pro Acer Aspire USB Mouse M-UB48 Logicool USB Mouse IOWCM-USB Logitech Coreless MouseMan Wheel USB interface Logitech USB Wheel Mouse M-BB48 Microsoft IntelliMouse Optical USB Interface
I/O - USB Printer/Scanner	Epson Stylus Color 740 USB interface HP DeskJet 880C USB interface Canon CanonScan D1250 (USB 2.0, JP OS Only) HP ScanJet 3300C Color Scanner MY97712194
I/O - USB Speaker/Joystick	JS USB Digital Speaker Panasonic USB Speaker EAB-MPC57USB AIWA Multimedia Digital Speaker SC-UC78 Microsoft Side Winder precision Pro Joystick 326-00069 Logitech WingMan Warrior Joystick Logitech WingMan Rumble Pad G-UA3
I/O - USB Camera	Intel Easy PC Camera A20953-001 Logitech QuickCam Express Internet Logitech QuickCam Home PC Video Camera VCAM-U1 Nikon Superhigh-Performance 3X Zoom COOLPIX990
I/O - USB Storage Drive	Logitech CDRW + DVDROM combo USB interface Iomega USB Zip 250MB Argosy Ultra Slim CDRW (USB 2.0) Plextor Burn-Proof CDRW (USB 2.0) Fujitsu MO-1300 1.3G (USB 2.0) Fujitsu 30G HDD (USB 2.0) Sony DVDROM (USB 2.0) IO-Data DVDROM (USB 2.0) IBM 32MB USB Memory Key Trek 32MB USB Memory Key
I/O - USB Hub	Belkin 4 Port USB Hub F5u001 Eizo I Station USB Hub DH-1401 Elecom USB Hub 4 Port UH-4S Sanwa USB Hub 4 Port 4 Port Hub (usb 2.0) UH-204
I/O - 1394 Storage Drive	Logitec Fireware CDRW + DVD-ROM Combo Yamaha Fireware 8824 CDRW CRW8824IX-VK Buffalo Fireware HD I.LINK 20GB DIL-20G I-O Data Fireware HD I.LINK 30GB HAD-130G Lacie Fireware HD 20G 7200RPM EXT-K525 DPTA-372050 VST-Fireware HD FW1260
I/O - 1394 Scanner	UMAX Fireware PowerLook 110
I/O - 1394 Camera	Sony DV DCR-TRV10
I/O - Access Point 802.11b	Hitachi DC-CN3300 Lucent RG-1000 Lucent WavePoint-II Cisco Aironet 350 Orinoco AP-500
I/O - Access Point 802.11a/b	Intel Dual Pro/Wireless 5000

Item	Specifications
I/O - Access Point 802.11a	Intel Pro/Wireless 5000
I/O - TV (NTSC/PAL)	Sony 29” Trinitron KV-XA29N90

Online Support Information

This section describes online technical support services available to help you repair your AOpen Systems.

If you are a distributor, dealer, ASP or TPM, please refer your technical queries to your local AOpen branch office. AOpen Branch Offices and Regional Business Units may access our website. However, some information sources will require a user i.d. and password. These can be obtained directly from AOpen.

AOpen's Website offers you convenient and valuable support resources whenever you need them.

In the Technical Information section you can download information on all of AOpen's Notebook, Desktop and Server models including:

- Service guides for all models
- User's manuals
- Training materials
- Main manuals
- Bios updates
- Software utilities
- Schematics
- Spare parts lists
- Chips
- TABs (Technical Announcement Bulletin)

The service repair section provides you with downloadable information on:

- Troubleshooting guides
- Tooling box information
- Repair instructions for specific models
- Basic repair guidelines
- Debug cards for latest models

For these purposes, we have included an Acrobat File to facilitate the problem-free downloading of our technical material.

Also contained on this website are:

- Returned material authorization procedures
- An overview of all the support services we offer, accompanied by a list of telephone, fax and email contacts for all your technical queries.

We are always looking for ways to optimize and improve our services, so if you have any suggestions or comments, please do not hesitate to communicate these to us.

For Further information, please access to AOpen’s website: http://www.AOpen.com/products/nb

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